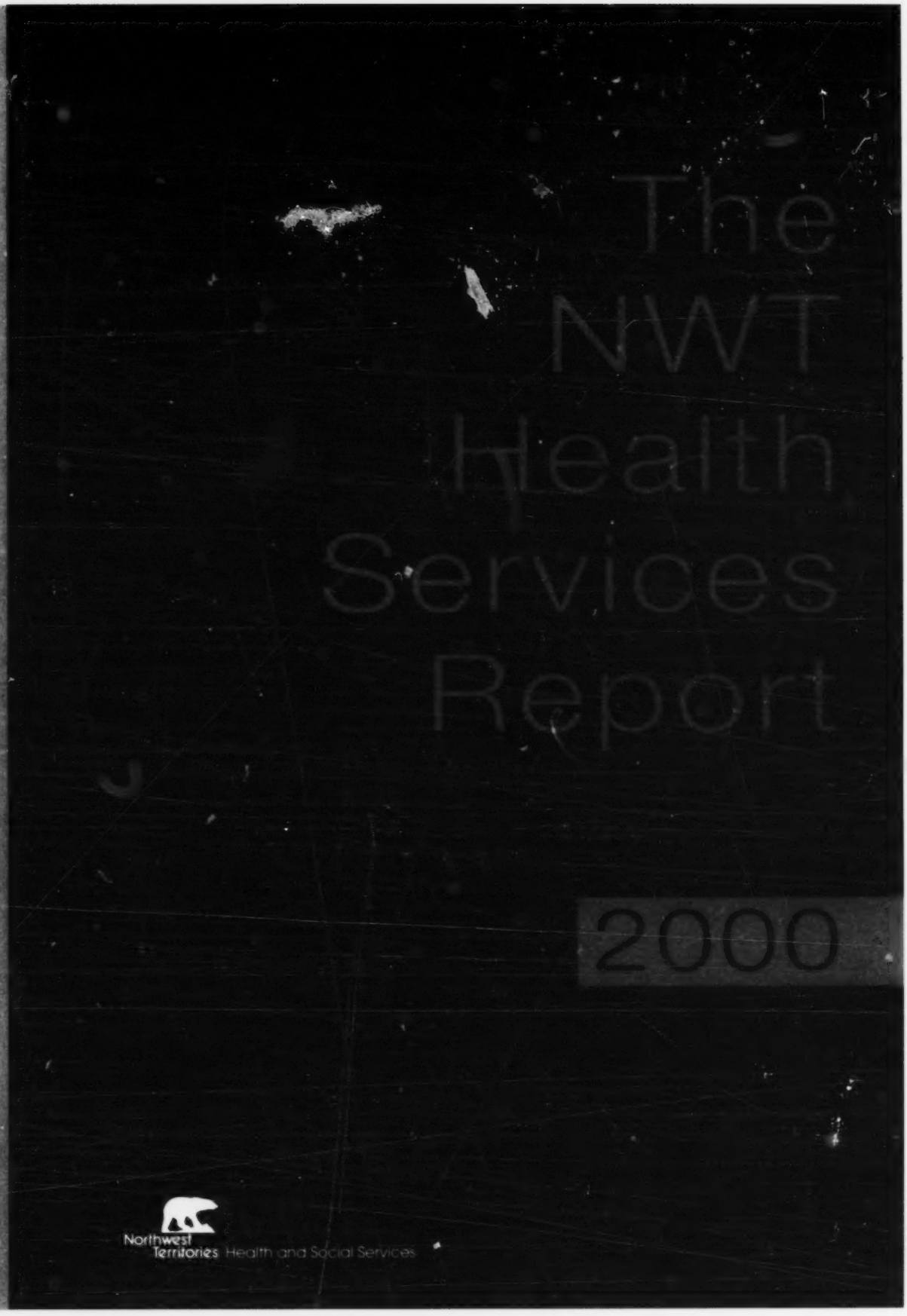
HOSPITALS • HEALTH CENTRES • PUBLIC HEALTH UNITS • PHYSICIAN SERVICES



The NWT Health Services Report

2000

Northwest Territories Health and Social Services

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This report would not have been possible without the assistance of many people who have offered advice, editorial review and many constructive suggestions. Special thanks goes to Larry McNabb at the Northwest Territories Bureau of Statistics, who met repeated requests for population data in a very helpful and timely manner. As well, Ken Lancour, at the Department of Health and Social Services, deserves a special recognition for his system wizardry, and untiring perseverance, in modernizing the Department's databases.

103-04118/

A Message from the Minister

It is my pleasure as Minister of Health and Social Services to present the NWT Health Services Report 2000.

The NWT Health Services Report 2000 is the first report on the utilization of health services in the Northwest Territories in over a decade. The report will help inform the public, health practitioners and decision-makers about the challenges that await the health system, and provide a baseline against which we can compare future trends.

The NWT Health Services Report 2000 also highlights the issue of prevention and health promotion versus treatment in several key areas: Preventable injuries due to accidents, making healthy lifestyle choices to reduce the occurrence, and ultimately the cost of services for treatment of heart disease and stroke, and the increasing challenge of providing for the health needs of our growing senior population.

It is our objective that the NWT Health Services Report 2000 clearly illustrates the need to develop more responsive, effective, responsible, and sustainable methods of delivering and managing health services, as highlighted in the Department of Health and Social Services' 1999 strategic plan, *Shaping Our Future*.

J. Michael Miltenberger
Minister of Health and Social Services

ERRATA

Page 14, second paragraph, second sentence should be approximately 13% instead of 6% of outpatients.

Page 55, Table 2 Out-Patient Activity - fourth blue highlight - the following numbers should be changed for Out of Territory:

3,148 Total Patients, 2.7 Visits Per Patient, 76 Patients Per 1,000, $311 Cost Per Patient.

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EXECUTIVE SUMMARY

This is the first report on the utilization of health services in the new Northwest Territories. It is intended as a companion document to the *NWT Health Status Report*, published in 1999, and is meant to inform the public, health practitioners and policy-makers about recent patterns in the utilization of health services in the Northwest Territories.

The report covers the period between 1994 and 1999, and focuses on the utilization of hospitals, health centres and public health units, physician services, and medical travel. These four areas are the most heavily utilized health services, and they are available to all residents of the NWT.

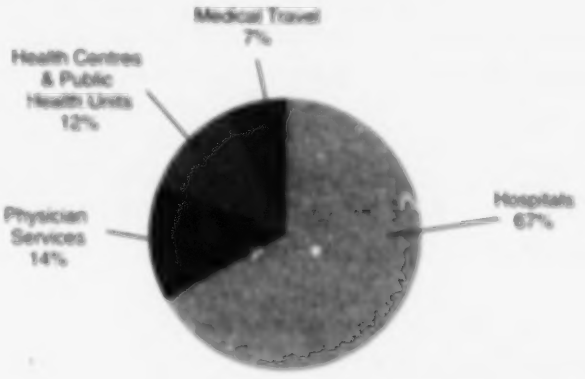
This report provides a comparative analysis of health service utilization and costs, not an accounting of dollars spent on health care. To accomplish this, the authors had to rely on administrative databases, which capture only a portion of total health expenditures in any given year. The figures reported are average values derived from the period 1994/95-1998/99.

The advantage of the data sources used for this report is that they allow in-depth analysis of the patterns of health service utilization, and the relative costs of providing various services. This lets us answer questions about who uses which services, when and how often, and for what reasons. However, a limitation of the data is that it can only speak to the relative costs of health care, not to the actual costs. The reader is cautioned, therefore, against trying to reconcile the figures contained in this report to those published in departmental main estimates and public accounts documents.

In any given year, there are in excess of 300,000 client-service provider contacts in the Northwest Territories. Approximately 80% of the population see a doctor at least once a year, and about 47% of the population see a nurse or community health representative at least once a year. In addition, there are an uncounted number of contacts with other health care providers – alcohol and drug counselors, mental health workers, and therapists from a variety of disciplines.

As can be seen from Figure 1, the greatest proportion of expenditures (67%) during the study period was for hospital services. The high costs of services in the NWT, combined with the fact that there are four hospitals serving a relatively small but widely distributed population, explains this large expenditure.

Figure 1
Services by Estimated Proportion of Expenditures
Annual Average 1994/95 to 1998/99



Source: Department of Health and Social Services

Hospital Inpatients

On average, 4,600 people (11% of the population) were hospitalized (on an inpatient or day surgery basis), at least once annually between 1994/95 and 1998/99. These patients required an average of 37,500 bed days per year, at an annual cost of $47 million. The average cost per bed day was $1,259.

Age was the most significant factor associated with hospitalization, with the highest rates occurring in people over the age of 65 and those under the age of one. Approximately 30% of people over the age of 65 are hospitalized each year, compared to about 10% of those in all other age groups. Moreover, per capita costs for hospitalizations showed a direct relationship with age, with a low of $513 per capita for those age 14 and under, to a high of $8,531 per capita for those age 65 and older.

These figures underscore the importance of demographics as a factor influencing the utilization of hospitals. Young populations with a high fertility rate, such as the Northwest Territories is today, experience a demand for hospital services due to pregnancy and childbirth, at relatively low costs. Aging populations, such as the Northwest Territories is becoming, experience a demand for hospital services due to chronic and terminal illnesses, at increasingly higher costs. Higher demand for health services by seniors is not unique to the NWT, but occurs across Canada.

Hospitalization costs were also associated with the underlying medical condition, with the top three being:

Mental disorders[1]	$5,953,000	(14%)
Pregnancy and childbirth	$5,264,000	(13%)
Respiratory illness	$5,202,000	(13%)

Hospital Outpatients

Hospital outpatient services were provided to an average of 22,900 patients annually, averaging 3.4 visits. Outpatient services cost approximately $6.7 million annually, for an average cost per visit of $86.

Age was a significant variable associated with outpatient costs, showing a direct relationship from a low of $106 per capita for those 14 and under to a high of $300 for those 65 and older.

Outpatient costs were also associated with underlying medical conditions, with the top three being:

Injuries (including poisonings)	$464,000	(19%)
Respiratory illness	$374,000	(16%)
Diseases of the nervous system and sense organs[2]	$282,000	(11%)

1 Includes hospitalization and special treatment (insured services) for alcohol and drug addictions.
2 The most common of these are ear and eye problems, and headaches.

Physician Services

On average, 34,000 people (80% of the population) had 194,000 encounters with physicians annually between 1994/95 and 1998/99, at an annual cost of approximately $12 million. The average cost per visit was $60.

Age was a significant variable associated with physician costs, showing a direct relationship from a low of $202 per capita annually for those 14 and under, to a high of $678 per capita annually for those 65 and older.

Physician costs were also associated with underlying medical conditions, with the top five being:

Disorders of the nervous system and sense organs	$994,000	(10%)
Respiratory illness	$991,000	(10%)
Pregnancy and childbirth	$964,000	(10%)
Injuries and poisoning	$929,000	(10%)
Mental disorders	$856,000	(9%)

Community Health Centres and Public Health Units

Approximately 20,000 people (about 48% of the population) made 107,000 visits to a nurse or community health representative annually between 1994/95 and 1997/98[1], at an annual cost of $8 million. The average cost per visit was $76.

Costs per capita did not show the same relationship to age as it did for hospitals and physicians. The highest costs per capita in community health centres and public health units were at the two extremes of the life span – $230 on average annually for those 14 and under, and $699 on average annually for those 65 and over.

Community health centre and public health unit costs were associated with underlying medical conditions, with the top three being:

Respiratory illness	$799,000	(23%)
Injuries (including poisonings)	$509,000	(15%)
Diseases of the nervous system and sense organs[2]	$352,000	(10%)

Medical Travel

About 3,200 people used medical travel services each year, at an average annual cost of $5.8 million. Costs for medical travel within the Northwest Territories averaged $2.8 million, while costs for out-of-territory travel averaged $3.0 million.

Costs per capita were significantly higher for seniors than for any other age group – $634 per capita for those over 65, compared to an average of $140 per capita for all other age groups.

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1 See Appendix 3, Section 4.3, for Time Frame description.
2 The most common of these are ear and eye problems.

The highest annual costs for medical travel were associated with the following conditions:

Injuries (including poisonings)	$796,000	(16%)
Symptoms, signs, and ill-defined conditions[1]	$561,000	(11%)
Disorders of the digestive system[2]	$466,000	(9%)
Diseases of the circulatory system[3]	$450,000	(9%)
Mental disorders	$393,000	(8%)

Looking to the Future

Age is one of the most significant factors underlying health care costs. It is not aging itself that is responsible for increasing health care costs, rather the fact, that with aging comes the onset of chronic conditions, to some degree, as a result of poor lifestyle choices and personal health practices. This is particularly significant for the Northwest Territories, where large numbers of people continue to smoke, consume alcohol to excess, have poor diets, and do not exercise regularly[4]. Given that the population of the NWT is relatively young, the health impacts of these behaviours will emerge over the next 10 to 20 years.

While it is obvious that older people require more health care than children and young adults, the magnitude of the difference may not always be apparent. Between 1994/95 and 1998/99, people over the age of 45 represented less than 20% of the population, but consumed about 40% of all health services. People over the age of 65 represented less than 4% of the population, but consumed 20% of all health services.

By 2020/21, the combined annual cost for hospitals, health centres, physicians, and medical travel is projected to increase by 140%, relative to the average annual cost between 1994/95 and 1998/99. A large proportion of the increase (32%) is attributable to the aging of the population. By 2020/21, 9% of the population in the Northwest Territories will be 65 and older, and this group will consume an estimated 40% of health care resources.

Over the next two decades, diseases of the respiratory system will continue to rank first in terms of health care costs. However, the cost of treating diseases of the circulatory system are projected to increase by nearly 300%, moving from seventh place to second by 2020/21. Many of these diseases are preventable, particularly those associated with smoking, and other poor lifestyle choices. As was made evident in *Smoke Alarm*, smoking is a major public health issue in the Northwest Territories. The findings underscore the importance of strategic investments to reduce the prevalence of smoking now, in order to reduce preventable demands on the health care system in the foreseeable future.

The findings in the *NWT Health Status Report 1999* also point to the importance of injury prevention. Injuries (including poisonings) are largely preventable, but they accounted for 16% of the total cost of services reviewed in this report. While a total elimination of injuries may be unrealistic, there is room for significantly reducing the burden of injuries on the health care system.

Most of the health care system resources in the NWT, as is the case across Canada, remain focused on the treatment of disease. Health promotion and prevention efforts can go a long way toward reducing the demand on institutions and professionals for treatment, thus increasing the sustainability of the system over the long-term.

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1 These represent a variety of conditions for which a definitive diagnosis was not possible.
2 The most common of these are problems with intestines and gall bladders, as well as dental problems.
3 The most common of these are heart attacks.
4 See for example, *NWT Health Status Report, 1999*, and *Smoke Alarm, 2001*, Department of Health and Social Services.

CHAPTER 1

Introduction

1.1 Looking Back

The last report on the use of health services in the Northwest Territories was published over 10 years ago, in 1990. The *Health Report 1990* covered several areas, including an analysis of health service utilization.

In 1999, the Department of Health and Social Services released *The NWT Health Status Report*, which provided the first update on the health status of the residents of the Northwest Territories since the 1990 report. As promised at the time of the release of *The NWT Health Status Report 1999*, a report on the use of health services follows as part of a three-year cycle that will continue into the future.

1.2 Looking Forward

There have been significant changes in the Northwest Territories since *Health Report 1990* was released. Two territories have been created, and land claims and self-government negotiations are at various stages of development or implementation.

Although these changes bring new choices and opportunities, residents of the Northwest Territories continue to require health services. How they use health services varies depending on their age, where they live, and how they live. This report profiles the past and projected use of health services by all the people of the Northwest Territories.

The aging of the population will have the greatest impact on the territorial health system, steadily increasing demand over the next twenty years. New health technologies, new pharmaceuticals, and consumer demand will also be additional cost drivers for the health system. The Northwest Territories will continue to face a considerable challenge attracting and retaining health professionals for the foreseeable future.

1.3 About the Report

This report profiles the use of health services by the people of the new Northwest Territories, and consequently information about Nunavut is not included.

The report fulfills several objectives: firstly, it provides information on how health services were utilized; secondly, it informs the public, practitioners and decision-makers about the challenges that await the health system in the future; and thirdly, it serves as a foundation for further research on a number of topics related to health services.

Combined, these objectives all serve the same goal – the development of more responsive, effective, responsible and sustainable methods of delivering and managing services – as highlighted in the Department of Health and Social Services' 1999 strategic plan, *Shaping Our Future*.

This report covers four broad areas of health services: hospitals, physicians, health centres and public health units, and medical travel. These four areas constitute the vast majority of health resources, and are, for the most part, available to all residents of the Northwest Territories.

It was not feasible to examine all aspects of health services within the context of this report. For example, the report does not examine or evaluate the quality of a particular type of service nor provide a review of services from the perspective of any particular facility. Such analysis requires more resources and different information systems than are currently available. Thus, this is a broad statistical report and is primarily quantitative in nature.

In certain sections of this report, the health service indicators are described by ethnicity. This is not to suggest that ethnicity, on its own, predetermines the level of use of health services. Rather, it is intended to highlight that, in some aspects, ethnicity may serve as a marker for more complex sets of socio-cultural, economic and other influences that impact on health status, and therefore, impact the use of health services.

Ideally, this report would have provided comparisons to the 1990 report related to health services. This was not possible as the previous report combined data for both Nunavut and the Northwest Territories and it was not feasible to separate the data by territory for the 1990 report. Time frames for the various indicators are consistent where possible throughout this report.

1.4 Chapter Outline

Chapter 2 profiles the use of hospital services both in the context of hospitalizations and outpatient visits.

Chapter 3 documents the use of physician services throughout the health system: within community or outpatient clinics and in hospitals.

Chapter 4 illustrates the range of community health services accessed at health centres and public health units.

Chapter 5 details the use of medical travel to access the services examined in Chapters 2, 3 and 4.

Chapter 6 provides an overview of challenges facing the Northwest Territories health care system, present and future.

Chapter 7 offers concluding remarks on the health and well being of residents of the Northwest Territories.

Appendix 1 presents a glossary of terms used in the report. While every effort has been made to simplify the language of the report, the use of some technical words were unavoidable when discussing health, and the conditions that influence it.

Appendix 2 provides a summary set of tables for most of the data used in the report. The amount of data that was analyzed was too great to place within this document.

Appendix 3 provides an overview of the methodology employed and the data sets used throughout the report.

Appendix 4 provides a reference to the tables and charts contained within the report.

CHAPTER 2

Hospital Utilization

This chapter provides an overview of hospital services that have been utilized both within and outside of the Northwest Territories. The scope of hospital services is diverse, and ranges from routine x-rays to emergency care, and from surgery to rehabilitation.

The intent of this chapter is to provide a comparative analysis of hospital utilization and costs, not to provide an accounting of dollars spent on hospital care in the NWT. To accomplish this, it was necessary to rely on the Department's Territorial Hospital Insured Services (THIS) database: an administrative database that captures only a portion of total hospital expenditures in any given year. Further, the figures reported are average values derived from the period 1994/95-1998/99.

Residents of the Northwest Territories have access to four hospitals in the territory and a number of others outside of the territory[9]. As in other provinces or territories, expenditures on hospitals dwarf other areas of health services examined in this report (health centres, physicians, and medical travel). On a per capita basis, the Northwest Territories has one of the highest expenditures on hospitals in Canada. The Canadian Institute for Health Information (CIHI) estimated that the 2000/01 per capita cost for hospitals was $1,953 for residents of the NWT, compared to the $892 average in Canada.

By their very nature, hospitals focus on the treatment of illness rather than on prevention or health promotion activities. While babies are delivered and screening is done for disease, the largest proportion of hospital services is dedicated to the care of the ill and injured. Given that hospitals consume approximately 67% of total health care resources, hospital utilization requires a more detailed examination.

The chapter begins with an examination of hospitalization (in-patient activity) followed by an examination of outpatient activity. A summary of results is then presented, along with a view toward the future demands on hospital services.

2.1 Hospitalization

Inpatients are people who are admitted to a hospital bed, as opposed to outpatients who go to a hospital for a diagnostic test, emergency visit or other short-term service, such as physiotherapy. Inpatients can also be long-term residents of a hospital, as in the case of the residents of a long term care ward.

2.1.1 Patients

On average 11% of the population of the Northwest Territories (over 4,600 people) spent at least one day in the hospital each year between 1994/95 and 1998/99. The proportion of the population who required at least one hospitalization varied across sex and age.

Women were more likely to be hospitalized than men, as they made up nearly 60% of all patients, but accounted for 48% of the population. On average, 140 per 1,000 (14%) women were hospitalized annually compared to 87 per 1,000 (9%) men. Women were more likely to be hospitalized than men primarily because of pregnancy and childbirth. When pregnancy and childbirth are isolated, gender differences become relatively insignificant.

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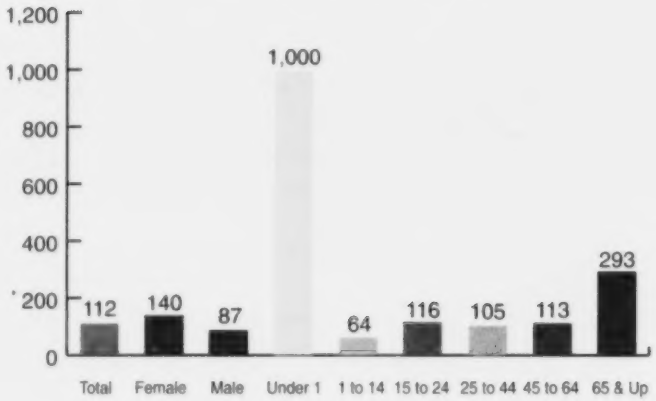
9 The four hospitals are: Stanton Regional in Yellowknife, H.H. Williams Memorial in Hay River, Fort Smith Health Centre, and Inuvik Regional. Most out of territory hospitalization takes place within the Edmonton area of Alberta. However, NWT residents have access to any hospital within Canada, and occasionally require services outside of the country.

As seen in Figure 2.1.1.1, the largest difference in utilization patterns was observed across age groups, with infants and seniors having the highest rates. Almost all infants were hospitalized for their births[10]. Excluding the population less than one year of age, seniors (age 65 and up) had the greatest chance of being hospitalized at 293 per 1,000 (29% of all seniors). The lowest age group was 1 to 14 years of age at 64 per 1,000 (6%).

Figure 2.1.1.1
Inpatient Rates per 1,000 by Sex and Age Group
Annual Average 1994/95 to 1998/99

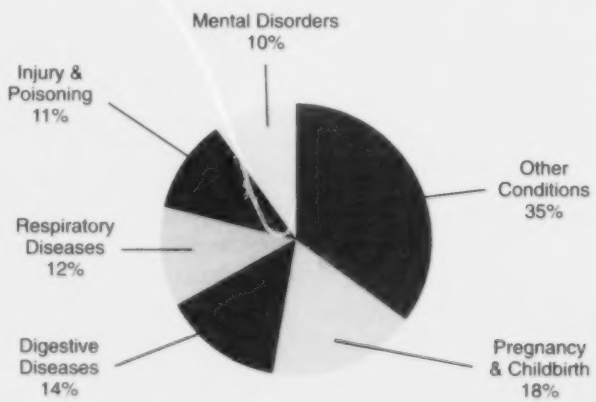


Sources: Department of Health and Social Services and NWT Bureau of Statistics

Hospitalization by cause is presented in six categories: those cases where a condition or cause was known or suspected, and those cases where the cause of the patient's hospitalization has been categorized as other conditions[11].

Figure 2.1.1.2 shows patients hospitalized by known or suspected cause are ranked. The top five causes were: pregnancy and childbirth[12], diseases of the digestive system, respiratory diseases, injury and poisoning, and mental health conditions. Combined, these five broad categories accounted for 65% of all patients hospitalized over the five year period.

Figure 2.1.1.2
Patients Hospitalized by Cause
Annual Average 1994/95 to 1998/99



Source: Department of Health and Social Services

Falling under the Other Conditions category, hospitalization categorized under a supplementary classification[13] accounted for less than 4% of all inpatients but accounted for 27% of expenditures (Section 2.1.3). In terms of supplementary classifications, hospitalizations primarily included recovery from surgery, some extended care, and care for the terminally ill (palliative care).

10 Often newborns do not have their own Health Care Plan Number. Therefore, the rate per 1000 displayed in Figure 2.1.1.1, is an estimate. Outside of being born, respiratory diseases accounted for 38% of infants hospitalized, and certain conditions originating in the perinatal period (age 20 weeks gestation to 6 days after birth) accounted for 23% of infants hospitalized. The main conditions in this latter category included: disorders related to pre-term delivery and low birth weight, perinatal jaundice, and respiratory conditions of fetus and newborn. Patients can be classified under this category after 6 days of age, if the condition originated during the perinatal period.

11 See Appendix 3, 1.7 for complete listing of classified diseases.

12 *Pregnancy and childbirth* include both normal and complicated pregnancy and childbirth.

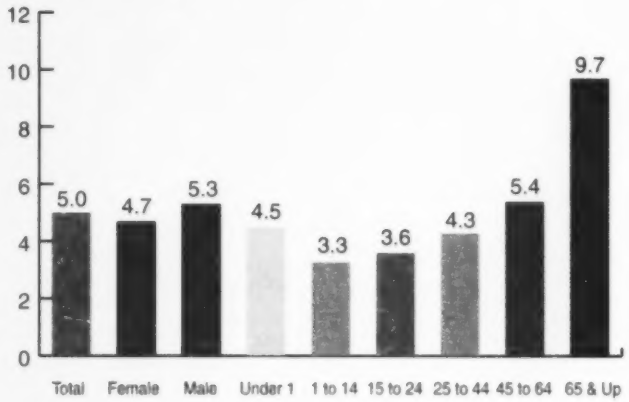
13 See Appendix 3, 1.7 for details on supplementary classification category.

2.1.2 Bed Days

A bed day equals one individual patient admitted to a hospital bed, even if the patient is discharged on the same day of admission. On average, the 4600 people who were inpatients spent a total of 37,500 days in hospital for each year between 1994/95 and 1998/99. The average length of stay varied across age and location of hospitalization, but did not change significantly across other demographic variables (gender, ethnicity, and residence).

The observed pattern of average length of stay across age group was similar to that seen with unique patient counts (see Section 2.1.1). One exception however, was with the senior population. Seniors, by far, had the longest hospital stays. As seen in Figure 2.1.2.1, senior inpatients averaged 9.7 days per hospital visit – nearly double the average for the entire population.

Figure 2.1.2.1
Bed Days per Visit by Sex and Age Group
Annual Average 1994/95 to 1998/99



Source: Department of Health and Social Services

The other significant difference in average length of stay was between hospitalization taking place within, as opposed to outside, the Northwest Territories. The five year annual average length of visit for in-territory hospitalization was 4.6 days, compared to 7.3 days for hospitalization occurring outside of the territory, mainly in southern Canada. This variation can be explained by the fact that territorial hospitals, in general, do not provide treatments that are as complex as those performed in larger southern hospitals. Typically, the greater the complexity of the treatment required, the longer the patient's stay in hospital.

Similar to the proportion of patients (Figure 2.1.1.2), the top five known or suspected conditions when measured by total bed days were: mental disorders (17%)[14], pregnancy and childbirth (15%), respiratory diseases (11%), injuries (8%)[15], and diseases of the digestive system (8%). Together, these five causes of hospitalization accounted for 60% of bed days.

Age continued to be a factor, when reason or cause of hospitalization was examined. When pregnancy and childbirth were excluded, seniors had the longest length of stay for three of the top five conditions listed in Table 2.1.2.1. The single exception was with circulatory disease, where infants and children both had the longest average stays. However, infants and children represented a small proportion of the total bed days for circulatory diseases.

Given that seniors had a greater rate of hospitalization, their proportion of bed days for each of the conditions listed in Table 2.1.2.1, was also relatively high. For example, seniors accounted for over 50% of all the bed days for diseases of the circulatory system – approximately 14 times their proportion of the population.

14 Mental disorders were the highest due to treatment for alcohol and drug dependencies (See Section 2.1.3).
15 Injuries include poisonings.

In the case of respiratory diseases, where seniors had the highest demand in terms of bed days, infants also require a significant amount of hospitalization. Infants accounted for over 500 of the total bed days used to treat respiratory diseases – over 7 times their proportion of the population.

Of the 500 bed days required to treat infants with respiratory diseases, 54% were due to either acute bronchitis or acute bronchiolitis. A further 32% of bed days for infants with respiratory diseases were to treat various forms of pneumonia.

Children, especially in the first two years of life, are particularly susceptible to respiratory illnesses. While conditions such as acute bronchitis and acute bronchiolitis can be influenced by the dry northern climate, the severity of these illnesses is greatly impacted by exposure to second hand smoke and other indoor air pollutants.

Table 2.1.2.1
Average Length of Stay and Bed Days by Top 5 Diseases and Age
Annual Average, 1994/95 to 1998/99

Top Five Diseases and Conditions	Age Group	Bed Days		
		Average	Total	Proportion
	Total	5.7	5,754	100%
	Under 1	0.0		0.0%
Mental Disorders	1 to 14	8.3		0.3%
	15 to 44	5.7		62.6%
	45 to 64	3.9		22.7%
	65 & Up	6.3		11.5%
	Total	4.6	3,665	100%
	Under 1	4.3		13.7%
Respiratory Diseases	1 to 14	2.7		17.8%
	15 to 44	3.4		16.2%
	45 to 64	5.5		17.0%
	65 & Up	8.8		35.3%
	Total	4.2	2,765	100%
	Under 1	2.6		0.5%
Injury and Poisoning	1 to 14	2.9		12.1%
	15 to 44	3.9		48.8%
	45 to 64	4.0		16.5%
	65 & Up	7.8		22.1%
	Total	3.4	2,516	100%
	Under 1	2.9		2.0%
Digestive System	1 to 14	1.5		11.6%
	15 to 44	3.5		39.3%
	45 to 64	4.5		26.3%
	65 & Up	5.9		20.8%
	Total	7.0	2,557	100%
	Under 1	13.7		1.3%
Circulatory Diseases	1 to 14	13.6		3.4%
	15 to 44	5.1		12.2%
	45 to 64	5.7		32.6%
	65 & Up	8.8		50.5%

Note: Pregnancy and Childbirth are excluded given they are both age-specific causes for hospitalization.
Source: Department of Health and Social Services

In contrast to infants, 46% of the 1,300 bed days used to treat seniors with respiratory conditions were for chronic respiratory diseases, referred to as chronic obstructive pulmonary disease (COPD) and allied conditions[16]. These chronic respiratory diseases are often the result of long-term smoking and/or long-term exposure to second hand tobacco smoke. A further 37% of bed days were used to treat various forms of pneumonia.

2.1.3 Costs

In total, hospital resources required by territorial residents resulted in an average expenditure of $47 million each year[17]. As with total patients and bed days, the use of hospital resources varied across sex and age. Whether the service was received in the Northwest Territories or outside the territory also made a difference.

As observed in Figure 2.1.3.1, between 1994/95 and 1998/99, the hospitalization cost per capita averaged $1,139. Per capita costs varied between women and men, with women averaging $1,300 per capita compared to less than $1000 for males. This variance by sex was almost completely related to hospitalization due to pregnancy and childbirth.

Opposite ends of the age spectrum experienced high per capita costs. During the first year of life, the average per capita cost was just under $3,100, nearly three times the average for all ages[18]. The highest average cost per capita was for the senior population at over $8,500.

16 Over 90% of COPD and allied conditions fell into two conditions: chronic airway obstruction and chronic bronchitis.
17 The costs for hospital services are estimates obtained from an administrative database intended for the purpose of reciprocal billing. These costs do not reflect the actual costs of running a hospital – much of which is fixed, regardless of utilization or occupancy. See Appendix 3 for a detailed discussion of cost estimates.
18 Outside of the cost of being born, the top two conditions by cost affecting infants were respiratory illnesses and conditions originating during the perinatal period. On average, these two conditions respectively accounted for 37% and 30% of the total cost of inpatient care for infants. All other conditions ranged accounted for approximately 4% or less of costs associated with infant care.

While seniors were more likely to be hospitalized, they were also more likely to stay longer when hospitalized. For example, on a per capita basis, seniors required over six times the number of bed days than the population as a whole. Moreover, a patient age 65 and over had an average length of stay of 21 days annually, as compared with an average of 8 days annually for all ages. These factors contributed to seniors having the largest demand, relative to their total population, in the territory.

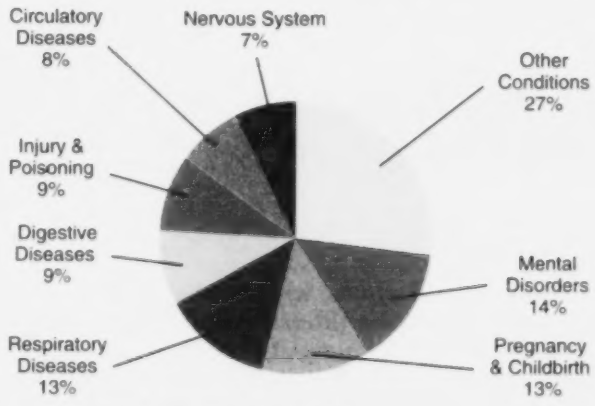
Figure 2.1.3.1
Per Capita Inpatient Costs by Sex and Age Group
Annual Average 1994/95 to 1998/99

Sources: Department of Health and Social Services and NWT Bureau of Statistics

The majority of hospitalizations occurred within the Northwest Territories. Only 17% of all patients required hospitalization outside of the NWT. However, the length of stay at out of territory hospitals was longer (7.3 days versus 4.6 days), accounting for 23% of all bed days. In contrast to the proportion of bed days, only 14% of total hospitalization expenditures were spent outside of territorial hospitals. The difference was in part reflective of a lower bed day cost in southern hospitals ($770 versus $1,400) as compared with hospitals in the NWT.

Figure 2.1.3.2 shows that hospitalization for mental disorders accounted for 14% of total costs, followed by pregnancy and childbirth at less than 13%. Diseases of the respiratory system and digestive system were third and fourth at 13% and 9% of total costs. The cost of hospitalization for injury and poisoning was the fifth highest, slightly behind diseases of the digestive system. Finally, circulatory diseases and diseases of the nervous system and sense organs were sixth and seventh, accounting for 8% and 7% of the total cost of hospitalization. The remaining ten classifications[19] accounted for approximately 27% of costs, with no one broad cause accounting for more than 5% of total costs.

Figure 2.1.3.2
Cost of Hospitalization by Cause
Annual Average 1994/95 to 1998/99



Source: Department of Health and Social Services

Mental disorders is a broad category, which includes a variety of conditions from depression to drug dependency. As seen in Table 2.1.3.1, the top three conditions under mental disorders by the use of hospital resources (costs) were affective psychoses, alcohol and drug dependency and related psychoses, and senile-related conditions (i.e., Alzheimer's Disease).

Included in affective psychoses were such problems as manic disorders, and

19 See Appendix 3, Section 1.7 for listing of 17 recognized disease classifications and supplementary classification.

monopolar and bipolar disorders. Affective psychoses contributed to 24% of the costs and 15% of the bed days classified under mental disorders.

Together, alcohol and drug related mental disorders made up 21% of the costs and 43% of bed days. Within these alcohol and drug-related disorders, alcohol and drug dependence syndrome alone made up 67% of costs but over 86% of bed days. This is because alcohol and drug treatment was often done in a specialized facility, which usually had a lower per bed day cost than a general hospital – less than $300 compared to over $1,200[20]. Alcohol and drug psychoses made up a further 33% of costs but only 14% of days. A higher cost per bed day – in excess of $1,600 on average – was associated with hospitalization for psychoses.

Table 2.1.3.1
Hospitalization for Mental Disorders – Bed Days and Costs
Annual Average 1994/95 to 1998/99

Reason	Proportions	
	Bed Days	Costs
Affective Psychoses (i.e., Manic, Mono - and Bi-polar)	14.7%	24.2%
A&D Dependency and A&D Psychoses	42.5%	21.4%
Senile Related Conditions	5.9%	10.2%
Depressive Disorders (NEC)	7.7%	9.4%
Neurotic Disorders	5.3%	7.2%
Schizophrenia	3.9%	6.0%
Other	20.0%	21.5%

Notes: A&D= Alcohol and Drugs; NEC = Not Elsewhere Classified.
Source: Department of Health and Social Services

Senile and presenile organic psychotic conditions, such as Alzheimer's Disease, were usually associated with the elderly and older adults[21]. Senile and presenile conditions amounted to over 10% of costs but less than 6% of bed days. However, it should be noted that hospitalization for the physical aspects of senile-related conditions is classified under diseases of the nervous system and sense organs[22].

Depressive disorders (not elsewhere classified under the non-psychotic mental disorders), neurotic disorders and schizophrenia contributed to approximately 17% of bed days and 23% of costs.

Table 2.1.3.2
Hospitalization for Supplementary Classifications – Cost by Age
Annual Average 1994/95 to 1998/99

Reason	Age Group	Average Cost and Proportion by Age Group	Proportion of Total Supplementary Classifications
	Total	**$2,346,118**	**41%**
Convalescence and Palliative Care	Under 45	25.5%	
	45 to 64	30.8%	
	65 & Up	43.7%	
	Total	**$1,936,930**	**34%**
Respite Care and Lack of Housing	Under 45	45.3%	
	45 to 64	18.7%	
	65 & Up	36.0%	
	Total	**$652,644**	**11%**
After Care and Long Term Treatments	Under 45	12.0%	
	45 to 64	37.2%	
	65 & Up	50.8%	
	Total	**$788,872**	**14%**
Other Supp. Classifications	Under 45	51.1%	
	45 to 64	22.0%	
	65 & Up	26.9%	

Source: Department of Health and Social Services

As noted in Section 2.1.1, a catchall category called "supplementary classifications" documents the secondary reasons why a patient is hospitalized. Table 2.1.3.2 details these supplementary health classifications, which included aftercare and recovery after surgery, palliative care, and respite care. These three areas accounted for 86% of the total costs of this classification. The average length of stay associated with these three types of care was primarily responsible for the high costs for this classification.

20 Treatment for alcohol dependency occurred mainly at Yellowknife Detox – which was an insured facility – for the fiscal years 1994, 1995, 1996, and 1997, with the facility closing during 1997. Treatment for alcohol dependency also occurred in general hospitals both in and outside of the Northwest Territories.
21 Between 1994/95 and 1998/99, 57% of the bed days were for patients age 65 and over, and a further 43% of the bed days were for patients age 45 to 64.
22 Alzheimer's Disease accounted for 16% of the costs of diseases of the nervous system and sense organs.

While seniors represented less than 4% of the total population, they accounted for over 40% of the costs for these three areas. In contrast, those under 45 years of age, represented 80% of the population but incurred about 30% of costs. As is shown in Section 2.3.2, these three areas are predicted to grow in significance over the next 20 years in terms of the use of hospital resources.

2.2 Outpatient Hospital Activity

Outpatients generally receive one of the following services: emergency care, diagnostic testing, or therapeutic care. The length of service is usually brief, under an hour in most cases.

On an average annual basis, nearly 23,000 residents of the Northwest Territories accounted for 78,000 outpatient visits, resulting in an annual average expenditure just under $7 million.

2.2.1 Patients, Visits and Costs

Over half of the population of the Northwest Territories received an outpatient service each year between 1994/95 and 1998/99. As shown in rates per 1,000 in Table 2.2.1.1, 62% of women were seen as an outpatient compared with 49% of men. In terms of visits per 1,000, women exceeded men with 2,300 versus less than 1,500 per annum.

Older age groups were more likely to access outpatient services. The one exception, however, was for infants (under 1 year of age), the majority of whom required a health service in an outpatient setting[23].

Besides infants, seniors and older adults (aged 45 to 64) had the highest need for outpatient services. Children, 1 to 14, had the lowest use of outpatient services.

Table 2.2.1.1
Outpatient Activity – Utilization Rates
Annual Average 1994/95 to 1998/99

Variable	Per 1,000 People Patients	Visits	Visits per Patient
Total	**553**	**1887**	**3.4**
Females	621	2,326	3.7
Males	490	1,483	3.0
Under 1	973	2,555	2.6
1 to 14	475	1,161	2.4
15 to 24	543	1,663	3.1
25 to 44	568	1,942	3.4
45 to 64	658	2,778	4.2
65 & Up	658	3,410	5.2
Aboriginal	495	1,750	3.5
Non-Aboriginal	609	2,020	3.3
Yellowknife	601	1,904	3.4
Regional Centre	737	2,977	4.4
Other Communities	371	108	42.9

Sources: Department of Health and Social Services and NWT Bureau of Statistics

These same patterns remain, for the most part, when the frequency of use is examined. Seniors, however, have the highest rate of repeat visits when compared to all other age groups. As seen in Table 2.2.1.1, seniors required an outpatient service, on average, over five times a year, with older adults (45 to 64) the next highest at four times a year. Infants, although more likely to have at least one visit to an outpatient clinic, required the service less than three times a year on average.

The data shows significant ethnic and community type variations with regard to outpatient visits. The aboriginal population and those who live in non-hospital based communities, use relatively less outpatient services than the Non-Aboriginal population and those who live in hospital based communities. Given that a higher proportion of the territorial Aboriginal population live in non-hospital based communities, many of their health needs are addressed within health centre settings.

23 The rate of 973 per 1,000 infants receiving at least one outpatient service in a given year is overstated. See Appendix 3, Section 1.5 for further details.

People living in the regional centres (Fort Smith, Hay River and Inuvik) had the highest use of outpatient services – 74% of that population base on average. This is not surprising given encounters with physicians take place within a hospital in those regional centres. The proportion of Yellowknife's population requiring an outpatient service was also higher than the territorial average. Sixty percent of Yellowknife's population used an outpatient service. Despite the presence of physician clinics outside the hospital, Yellowknife residents still use outpatient services for health concerns that occur outside of regular clinic office hours, or when they have difficulty obtaining an appointment, as well as for any number of tests (e.g., x-rays) that may be required.

When compared to hospitalization, a larger proportion of outpatient services were provided in the NWT. Approximately 6% of outpatients made at least one visit to a hospital outside of the Northwest Territories, in contrast to 17% of all of those hospitalized. However, the proportion of outpatient visits at out of territory hospitals was over 10% and accounted for 14% of the total outpatient expenditures.

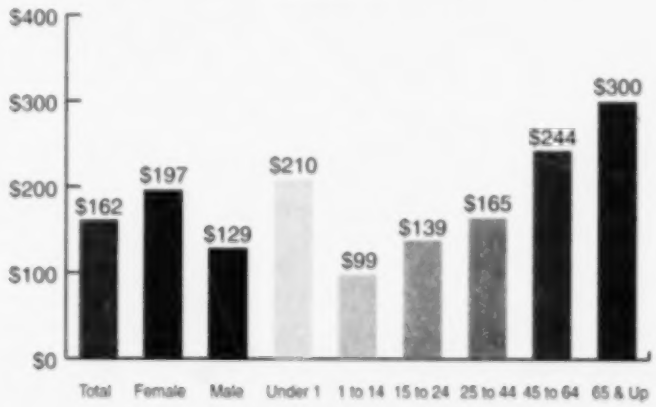
Outpatient services in southern hospitals largely occurred because patients were there for other treatments, such as surgery. These services primarily included general medical exams and special investigations such as lab tests or x-rays. Certain outpatient services, such as some early screening procedures for congenital birth defects, are only available in the south.

The average cost of an outpatient visit was $116 outside of the territory, compared to $83 per visit in the territory. In contrast, the average bed day cost for hospitalization was almost twice as high within the territory than it was outside of the territory.

As shown in Figure 2.2.1.1, the average annual per capita cost of outpatient services for all territorial residents was $162. Women had the highest cost per capita at $197 compared to men at $129. As with hospitalization, the highest per capita costs were associated with seniors at $300, and the lowest were for children at $99 per capita.

The Aboriginal population's use of outpatient services resulted in a lower per capita cost of $147 when compared to the Non-Aboriginal population at $176. This difference was because of the higher use of outpatient services by the Non-Aboriginal population, and the fact that more Aboriginal patients access equivalent services in a health centre setting.

Figure 2.2.1.1
Per Capita Outpatient Costs by Sex and Age Group
Annual Average 1994/95 to 1998/99



Sources: Department of Health and Social Services and NWT Bureau of Statistics

Reasons for an outpatient visit can also be divided into two categories: one, where an illness, condition or injury is known or suspected; and two, where a supplementary service related to the former is required. Visits categorized as a supplementary classification accounted for most of the use of outpatient resources – over 60% of the visits. Moreover, these supplementary classifications, as presented in Table 2.2.1.2 were different from those when people were hospitalized. For outpatients this classification is used mainly for tests, examinations and therapeutic services related to medical conditions known or suspected within the seventeen chapters of the *International Classification of Diseases (9th Revision)*.[24]

24 See Appendix 3, Section 1.7 for further details on the International Classification of Diseases.

Special investigations and examinations accounted for about 50% of the visits and costs categorized as supplementary services. Most of these services were laboratory tests and x-rays. The second largest category, in terms of costs, was general medical examinations, followed by rehabilitation services (physiotherapy and occupational therapy).

The remainder of outpatient services used by patients where a disease, condition or injury was known or suspected accounted for less than 40% of all visits and costs. Of these services, the following five categories accounted for over 60% of all resources used: injuries and poisonings, respiratory diseases, diseases of the nervous system and sense organs, diseases of the digestive system and pregnancy and childbirth.

Table 2.2.1.2
Supplementary Classifications – Visits and Costs
Five Year Averages, 1994/95 to 1998/99

Reason For Visit	Visits	%	Costs	%
Special Investigations and Examinations	25,305	52.8%	$2,070,540	49.0%
Laboratory Examination	12,854		$1,045,298	
X-Rays (Radiological Exam)	8,789		$736,567	
Other	3,662		$288,675	
General Medical Exams	7,749	16.2%	$876,854	20.8%
Unspecified Exam	6,860		$79,708,125	
Routine Health Checkup	844		$7,655,845	
Other	44		$3,215	
Rehabilitation	8,074	16.8%	$663,556	15.7%
Physiotherapy	7,034		$579,885	
Occupational Therapy	994		$79,375	
Other	46		$4,296	
Other Supp. Classifications	6,825	14.2%	$614,141	14.5%
Total Supp. Classifications	47,953	100.0%	$4,225,091	100.0%

Source: Department of Health and Social Services

2.3 Conclusion

Hospitals accounted for the largest demand of health care services for the residents of the Northwest Territories. The use of hospital services was influenced by age more than any other factor. People in their first and last years of life used more services – in relation to their respective population bases – than any other age group. Similar to the rest of Canada, seniors exhibited the largest need of health services. And similar to national trends, the proportion of services used by seniors will grow over the next two decades, as the population of the territory ages.

2.3.1 The Present

It is clear from the results presented in the sections on hospital utilization, that age is the most important determinant of hospital use in the Northwest Territories. As shown in Table 2.3.1.1, most conditions or diseases strike the senior population the hardest. A comparison of the top reasons for hospitalization for the

Table 2.3.1.1
Hospital Services – By Cause and Average Cost per Capita
Seniors and Total Population, Northwest Territories

Reason	Age 65 and over	All Ages	Difference % than average
Circulatory Diseases	$1,192	$84	1326%
Respiratory Diseases	$1,187	$135	781%
Nervous System and Sense Organs	$1,031	$82	1161%
Cancers	$619	$49	1169%
Mental Disorders	$589	$146	304%
Injury and Poisoning	$586	$97	505%
Digestive Diseases	$507	$91	456%
Other	$1,358	$378	259%
Supplementary Classifications	$1,762	$240	633%
Total	**$8,831**	**$1,301**	**579%**

Sources: Department of Health and Social Services and NWT Bureau of Statistics

senior population versus the total population provides a hint of the nature of future demands on the hospital system in the decades to come.

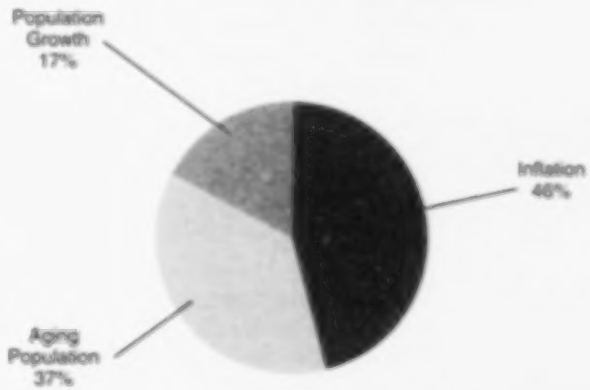
The rise in the demand for health care is partly inevitable as the population ages. However, a healthy and active lifestyle can prevent many conditions, thus reducing the impact of illness. For example, most respiratory diseases and many cancers are related to tobacco use. Tobacco use reduction now would dramatically impact on future rates of tobacco related illness and, therefore, on health care costs. Moreover, people who are non-smokers and are physically active tend to recover more quickly from an injury or an illness.

2.3.2 The Future

If current patterns of hospital service utilization continue, the annual cost of hospital services provided to territorial residents will more than double over the next two decades, threatening the sustainability of the entire health system.

By 2020, hospital services are projected to require approximately $140 million per annum – $87 million more per annum compared to a five-year historical average of approximately $53 million (1994 to 1998). This projection is based on three cost drivers: population increase, aging population and inflation. As seen in Figure 2.3.1.1, inflation – set at a rate of 1.5% per annum – contributes to 46% of the cost increase, with the aging of the population contributing 37%, and population growth contributing the remaining 17%.

Figure 2.3.1.1
Composition of Hospital Cost Projections



Sources: Department of Health and Social Services and the NWT Bureau of Statistics

The effects of an aging population on the hospital system can be seen in Table 2.3.2.1. By 2020/21, the demand for services related to conditions that disproportionately affect people later in life grows faster than the demand for all other hospital services. Such age related conditions include the following: circulatory diseases, diseases of the nervous system and sense organs, cancer, and respiratory diseases.

Over the next two decades, demand on hospital services related to diseases of the circulatory system – primarily heart disease and stroke – are predicted to increase by over 300%, making this the second highest cost area by 2020/21.[25] This is a significant increase from the historical average recorded between 1994/95 and 1998/99, where patients with circulatory disease consumed the sixth largest amount of hospital services. Diseases of the nervous system and sense organs are predicted to grow by well over 200%, as well as a 200% increase for cancer, and a 190% increase for respiratory diseases. However, as noted before, the true cost of each of these conditions is not completely known, as much of the services categorized under supplementary classifications are directly related to these and other diseases.

25 Approximately 85% of the cost of circulatory disease associated with the care of inpatients was related to heart disease and stroke.

Within supplementary classifications, convalescence, respite, and after surgery care – disproportionately required by seniors – account for the largest amount of health care resources. As the population ages, the demand for these forms of care will grow significantly, prompting the need for a more detailed examination of the best options for territorial residents in the latter part of their lives.

It is important to note that the above cost projections are estimates, and cannot quantify all cost drivers. On the one hand, the projections are likely to be conservative for a number of reasons: technological change, rising expectations, increasing life spans, and uncertainty over inflation (See Appendix 3 – Section 7.0). On the other hand, lifestyle changes by people in their 40s and 50s, such as smoking cessation, increased physical activity, and improved diet, may reduce the burden of illness for such diseases as heart disease, stroke, cancer, and other lifestyle related illnesses.

Table 2.3.2.1
Projected Estimates of Total Hospital Costs
Northwest Territories 2020/21

Reason	Expenditure	%	Change from 1994/95-98/99 Dollars	Change from 1994/95-98/99 Proportional
Respiratory Diseases	$16,191,608	11.5%	180%	11%
Circulatory Diseases	$14,533,183	10.3%	320%	61%
Mental Disorders	$14,506,571	10.3%	140%	-6%
Injury and Poisoning	$9,601,884	6.8%	140%	-6%
Digestive Diseases	$8,938,845	6.3%	137%	-9%
Pregnancy and Childbirth	$8,072,865	5.7%	49%	-42%
Cancers	$6,134,674	4.4%	204%	16%
Other	$24,024,361	17.1%	136%	-10%
Supplementary Classifications	$27,835,529	19.8%	180%	7%
Total	**$140,862,782**	**100.0%**	**182%**	**0%**

Notes: Numbers are forecasts, and therefore, subject to future revisions.
Sources: Department of Health and Social Services and NWT Bureau of Statistics

CHAPTER 3

Physician Services

This chapter examines how people in the Northwest Territories utilize physician services. In addition to providing services to hospital inpatients, physicians are available to hospital outpatients (after-hours and emergency) and to patients in community clinics. There are seven medical clinics in the NWT, all of which are located in major centres: Yellowknife, Inuvik, Hay River and Fort Smith. Physicians from these clinics travel regularly to outlying communities to provide services, and people are referred from outlying communities to see physicians at clinics in the larger centres.

The intent of this chapter is to provide a comparative analysis of the utilization of physician services and costs, not to provide an accounting of dollars spent on physician services. The scope of these services ranges from diagnostic tests, such as an ultrasound, to physical check-ups, and from simple to complex surgery and emergency care. To accomplish this, it was necessary to rely on an administrative database, which captures only a portion of total physician expenditures in any given year. Further, the figures reported are average values derived from the period 1994/95-1998/99. The Canadian Institute for Health Information (CIHI) estimated that the 2000/01 average per capita physician services cost was $375 for residents of the NWT, compared to $405 across Canada.

Between 1994/95 and 1998/99, most physicians were paid on a fee-for-service basis – billing for services according to a negotiated fee schedule. The fee schedule provided the amount a physician can bill for each procedure or service performed. The cost for physician services in the Northwest Territories was fully insured, and was borne directly by the government.[26]

By the end of 2000, all private medical clinics in the Northwest Territories had been purchased by health and social services boards. This means that most physicians are now being paid a salary based on a contract with the board. The information presented in this chapter will provide valuable baseline data against which to evaluate the impact of moving from fee-for-service to contractual arrangements with physicians in the NWT.

When examining the patterns of visits to physicians in the Northwest Territories, it is important to take into account the location of hospitals and physician clinics. Yellowknife has the greatest number of clinics, and the smaller communities have none (although health centres serve similar purposes). Hospitals are located in Yellowknife and in the regional centres of Inuvik, Hay River and Fort Smith. Health centres, staffed by nurses, are the first point of contact to the health system for many territorial residents. Nurses refer patients to physicians on an as-needed basis. Accessibility, or proximity to a physician, is probably the single greatest factor influencing the utilization of physician services.

3.1 Patients

Between 1994/95 and 1998/99, an average of 33,657 people (81% of the population) received a physician service at least once a year.

In absolute terms, slightly more women than men visited a physician annually, although in the general population men slightly outnumber women. People between the ages of 25 to 44 represented the single-largest age category to visit a physician annually. However, this was the largest age group in terms of the population of the Northwest Territories.

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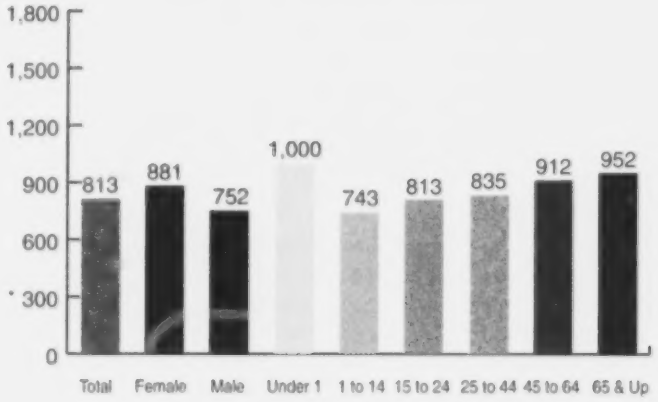
26 There were a few exceptions, such as medical exams required for insurance purposes or services billed to third parties such as the Canadian Armed Forces or Worker's Compensation Board.

As seen in Figure 3.1.1, both sex and age were important factors underlying physician visits. Although the absolute numbers were very close, the proportion of women who visited a physician was higher than the proportion of men – 881 per 1,000 (88%) of all women visited a physician at least once a year, compared to 752 per 1,000 (75%) of all men. This gender difference is largely the result of women encountering physicians for matters related to pregnancy and childbirth.

Figure 3.1.1
Patients per 1,000 by Sex and Age Group
Annual Average 1994/95 to 1998/99



Sources: Department of Health and Social Services and NWT Bureau of Statistics

After infants[27], the proportion of people receiving services from a physician each year increased across the life span. As can be seen in Figure 3.1.1, 743 per 1,000 (74%) of population between the ages of 1 and 14 saw a physician annually. In contrast to children, 952 per 1,000 (95%) of those people over the age of 65 saw a physician annually. This finding was consistent with the pattern noted for hospital usage (see Chapter 2), and serves to underscore the fact that age is one of the most powerful determinants of health service utilization.

Ethnicity was also found to influence patient visits to physicians. Seventy-two percent of the Aboriginal population in the Northwest Territories visited a physician on an annual basis, compared to 90% of the non-Aboriginal population. The distribution of Aboriginal people varies with community size, and community size is the most important factor determining the use of physician services.

On average, almost half of all people who saw a physician annually resided in Yellowknife. The other half was almost split evenly between the residents of regional centres (Hay River, Inuvik and Fort Smith) and those who lived in other communities (rest of the territory).

While these figures might be seen to mirror the distribution of the population in the Northwest Territories, the proportional differences between the larger centres and the smaller communities suggest that there is a direct link between the model of care and the utilization of physician services. For example, over 90% of the population of Yellowknife and the regional centres saw a physician at least once per year on average, compared to 64% of the population who resided in other communities. In those centres, primary care can only be accessed through physicians.

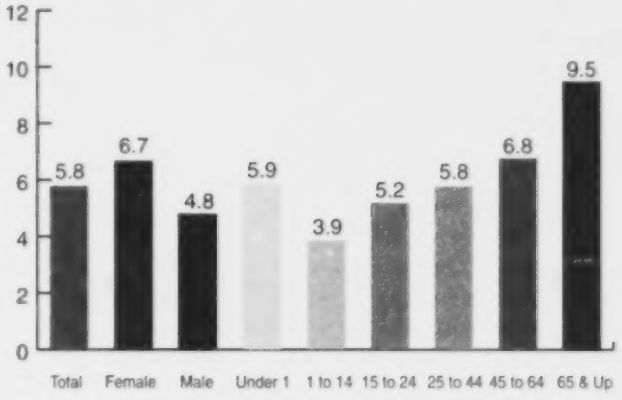
When ethnicity and community type were examined together, the following results were observed. For Yellowknife, 80% of Aboriginal residents visited a physician on average compared to 92% for Non-Aboriginal residents. For regional centres, 83% of Aboriginal residents visited a physician compared to 98% of Non-Aboriginal residents, and for other communities, the split was 64% of Aboriginal and 78% of Non-Aboriginal residents visited a physician. While community size and physician availability were factors, ethnicity accounted for some of the difference in annual physician encounters.

27 All infants encounter a physician at time of birth or a subsequent check up. In Figure 3.1.1, the rate of 1,000 per 1,000 infants is an estimate. See Appendix 3, Section 1.5 for problems associated with rates and single years of age.

3.2 Visits

On average, between 1994/95 and 1998/99, there were a total of 194,181 patient-physician encounters every year. While the total annual number of men and women visiting a physician was approximately the same, women made more visits per year – 61% of the total – than men. Encounters related to monitoring a pregnancy and delivering babies are primarily responsible for the higher rate of visits for women when compared to men.

Figure 3.2.1
Visits per Patient by Sex and Age Group
Annual Average 1994/95 to 1998/99



Sources: Department of Health and Social Services and NWT Bureau of Statistics

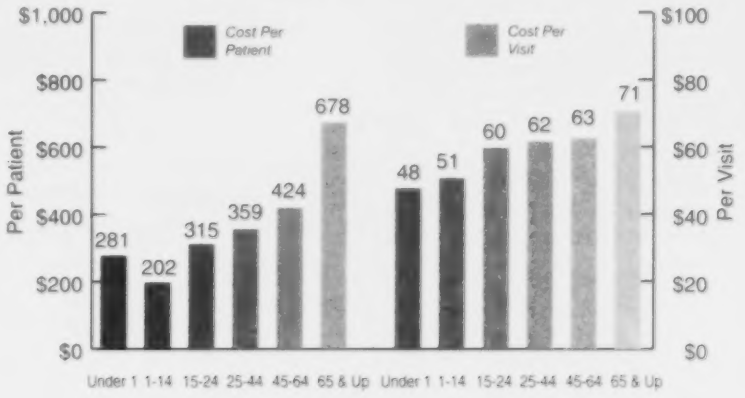
As was noted in the previous section, age is important in determining health service utilization. As can be seen in Figure 3.2.1, there is a direct relationship between age and the number of annual visits to a physician. Infants had an average of 5.9 visits a year, while seniors had an average of 9.5 visits a year.

Of the total number of patient-physician encounters per year, 51% were made by residents of Yellowknife, 29% by residents of the regional centres, and 20% by residents of smaller communities in the NWT. However, on a proportional basis, residents of the regional centres who saw a physician made 6.4 visits per year, while residents of Yellowknife who saw a physician made 7 visits per year. By comparison, residents of smaller communities who saw a physician made 4.3 visits per year.

3.3 Costs

Between 1994/95 and 1998/99, the annual expenditure for physician services was $11,700,000.[28] This was approximately 14% of the four areas of health services examined by this report.

Figure 3.3.1
Cost per Patient and per Visit by Age Group
Annual Average 1994/95 to 1998/99



Source: Department of Health and Social Services

In absolute terms, more money was spent on providing physician services to people between the ages of 25 and 44, since they represent the largest segment of the population, and account for the largest age group of patients. However, in relative terms, both costs per patient and costs per encounter showed a direct relationship with age, as can be seen in Figure 3.3.1.

28 All financial data is reflective of the administrative databases and should not be considered the total costs (See Appendix 3, Section 3.1, for more details).

The average cost per patient between 1994/95 and 1998/99 was $281 for under one year of age, and $202 for 1 to14 year olds, compared to $359 for 25 to 44 year olds, and $678 for patients 65 years of age and older. Costs per encounter ranged from $48 (under 1) to $71 (65 and older).

Costs per patient varied with community size, with an average of $409 for patients from Yellowknife compared to $312 for patients from the smaller communities. However, costs per encounter were higher for patients from the smaller communities at $72 than they were for patients from Yellowknife at $58.

3.4 Reasons Underlying Patient-Physician Encounters

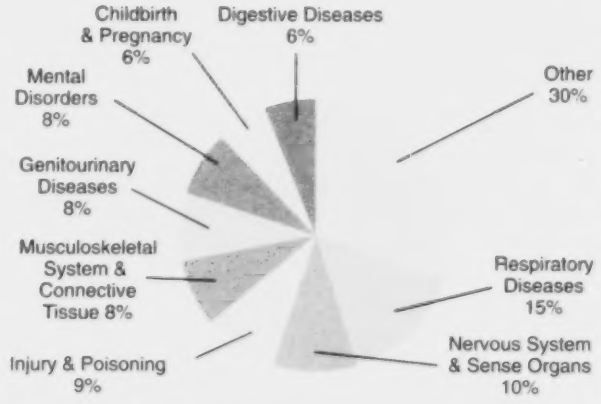
People see physicians for a wide variety of reasons[29]. Some people visit a physician because they have an illness, some are simply not feeling well, or wish to consult a physician on personal or family issues. Still others are quite well but see a physician for a medical check-up, for a test or other preventive measure. As in Chapter 2, in order to facilitate the analysis, the reasons for visiting a physician have been broken into two broad categories: known or suspected medical conditions and health issues and other factors influencing contact with physicians. In the analysis that follows, it is important to note that for any given patient there may be more than one reason underlying the patient-physician encounter.

3.4.1 Known or Suspected Medical Conditions

As can be seen in Figure 3.4.1.1, the most frequent reason for seeing a physician (15% of all encounters) was to seek a diagnosis or treatment for a disease of the respiratory system.

The *NWT Health Status Report* revealed that 46% of the population of the Northwest Territories were 'current' smokers in 1994/95.[30] Smoking is a major cause of respiratory illness and, this combined with the cold and dry climate of the Northwest Territories, likely explains why respiratory conditions are the leading reason for illness-related physician visits.

Figure 3.4.1.1
Proportion of Encounters by Cause
Annual Average 1994/95 to 1998/99



Source: Department of Health and Social Services

The second most frequent reason for a visit to a physician was for diseases of the nervous system and sense organs (10% of all encounters).[31] The next most frequent reason for seeing a physician was for treatment of injury or poisoning (9% of all encounters).

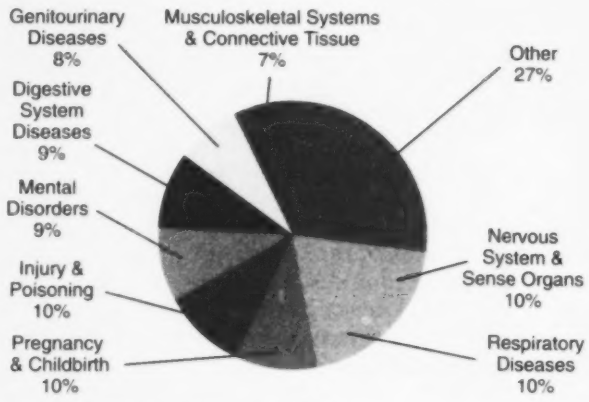
Of the $11.7 million spent annually on physician services, 82% ($9.6 million) was spent on the initial diagnosis and/or treatment of specific diseases or conditions. Expenditures by disease type are summarized in Figure 3.4.1.2.

29 See Appendix 3, 3.2, for discussion of underlying cause behind the health care service.
30 The *NWT Health Status Report*, Department of Health and Social Services, 1999, p. 53.
31 Tied with diseases of the nervous system and sense organs, is a category referred to as symptoms, signs, and ill-defined conditions. These are conditions with more than one possible diagnosis and/or where a diagnosis is unclear. Conditions include aches and pains, stomach problems, sleep difficulties, fatigue, skin problems and other complaints for which a definitive diagnosis was not possible. Activity categorized under this classification has been included within the category of "Other".

On average, between 1994/95 and 1998/99, the top five conditions, accounting for almost 50% of expenditures, were diseases of the nervous system and sense organs, respiratory diseases, pregnancy and childbirth, injury and poisoning and mental disorders.

Of the $1 million expended on diseases of the nervous system and sense organs, 45% was for patients with ear problems, and a further 39% was for eye problems. On a cost per capita basis, seniors used three times the services related to the nervous system and sense organs when compared to the population as a whole.

Figure 3.4.1.2
Proportion of Costs by Cause
Annual Average 1994/95 to 1998/99



Source: Department of Health and Social Services

Of the $1 million expended on diseases of the respiratory system, over 50% were for acute respiratory infections, and a further 21% on chronic obstructive pulmonary diseases (COPD) and allied conditions. Acute respiratory infections included such things as sore throats, tonsillitis, bronchial and sinus problems. Within COPD and allied conditions, over 80% of the demand on physician resources were for asthma and chronic bronchitis.

In terms of age, 39% of the expenditures on respiratory problems were for children, age 0 to 14 years, at a per capita rate of $33. Infants and toddlers less than 2 years of age – a time in life when respiratory problems are not uncommon – made up a disproportionate share of the physician costs for children, as a whole. Children under two, averaged $80 per capita compared to $26 for children age 2 to 14 years. At the other end of the age spectrum, seniors averaged $50 per capita for respiratory diseases. All other age groups were below the average rate of $24 per capita.

Of the other top demands on physician resources, pregnancy and childbirth accounted for an annual average of 10% of expenditures; injuries and poisoning accounted for less than 10%, and mental disorders accounted for 9% of annual expenditures.

3.4.2 Other Factors Influencing Contact With Physicians

On average annually, 19,400 patients had approximately 51,500 patient/physician encounters for reasons other than a known or suspected condition or illness. These visits accounted for approximately $1.8 million annually between 1994/95 and 1998/99.

When examined at the next level of detail, as done in Figure 3.4.2.1, about 55% of these encounters were for special investigations and examinations. The next largest category, for persons seeking consultation without specific complaint or sickness (mainly counseling on treatment plans, test results, medical advice and education), accounted for 8% of visits. Third largest, at 6%, were patients who were screened for cardiovascular, respiratory and genitourinary diseases. Follow-up examinations and special screening for cancer (neoplasm) each accounted for 5%. More than 50 different reasons comprised the remaining 21% of physician-patient encounters over the five-year period.

Table 3.4.2.1 provides the most detailed information available for each of the five categories listed.

For visits pertaining to special investigations and examinations, over 60% were for x–rays and a further 30% were for laboratory exams. Most of these activities would take place within a hospital, and the person being examined would be an outpatient. As noted in Section 2.2.1, most of the outpatient resources demanded under the category of special investigations and examinations for outpatients were for x-rays and laboratory exams.

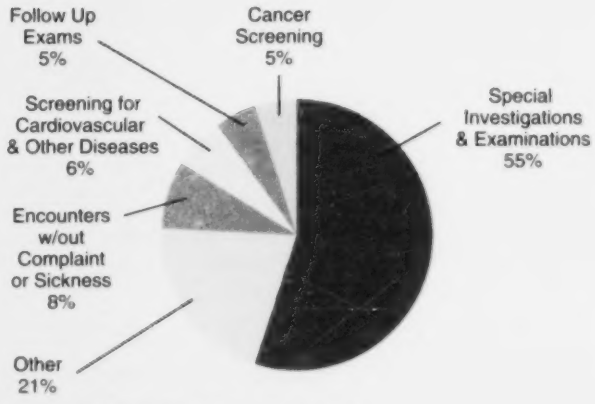
For encounters without specific complaint or sickness, over 90% of the encounters were seeking advice or counsel from physicians on unspecified health-related matters. As with any other physician encounter, the patient may receive more than one service per visit. For instance, counseling can often occur at the same time as the patient was being seen for another or related reason.

For visits related to screening for diseases, almost 100% of the encounters were for cardiovascular diseases.

For follow-up examinations, almost 80% of encounters were to do with examination following an unspecified treatment. Another 10% were to examine a patient after they had surgery. And, a further 7% were to examine the patient following treatment of a healed fracture.

Finally, in terms of screening for cancer almost all encounters were for two cancer types. Approximately 62% of these physician encounters were for cervical cancer screening (pap smears). Another 37% were for screening against or for the diagnosis of breast cancer (mammograms).

Figure 3.4.2.1
Other Factors Influencing Physician Contact – Visits by Cause
Annual Average 1994/95 to 1998/99


Follow Up Exams 5%
Cancer Screening 5%
Screening for Cardiovascular & Other Diseases 6%
Special Investigations & Examinations 55%
Encounters w/out Complaint or Sickness 8%
Other 21%

Sources: Department of Health and Social Services

Table 3.4.2.1
Other Factors Influencing Physician Contact – Visits by Detailed Cause
Annual Average 1994/95 to 1998/99

Rank	Factor as Cause of Visit	Proportion of Visits for Each Factor
1	*Special Investigations and Examinations*	
	X-Rays	60.6%
	Laboratory Exams	29.7%
	Gynecological Exams	5.4%
	Other	4.3%
2	*Encounters without Complaint or Sickness*	
	Advice on Unspecified Health Matters	90.5%
	Other	9.5%
3	*Screening for Cardio., Resp. and Genitourinary Diseases*	
	Screening for Cardiovascular Diseases	98.5%
	Other	1.5%
4	*Follow Up Examinations*	
	Examination following an Unspecified Treatment	78.8%
	Examination after Surgery	10.6%
	Examination after Treatment for a Healed Fracture	7.3%
	Other	3.3%
5	*Cancer Screening*	
	Cervical Cancer Screening (Pap Smears)	61.9%
	Breast Cancer Screening (Mammograms)	36.9%
	Other	1.2%

Source: Department of Health and Social Services

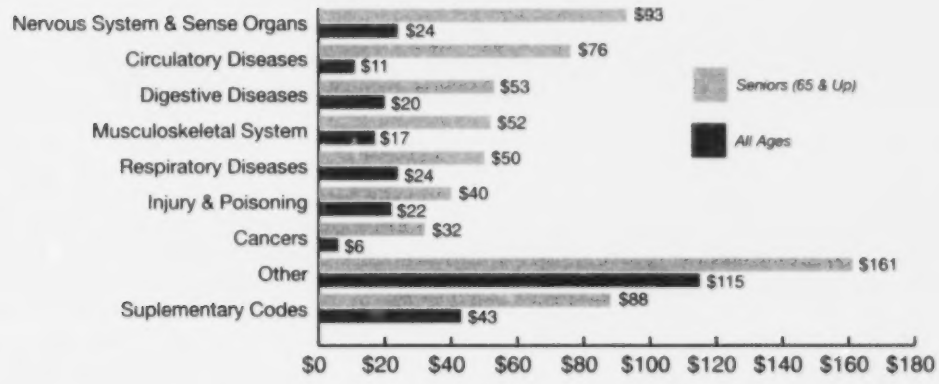
3.5 Conclusion

3.5.1 The Present

The foregoing sections have presented a complex picture of the utilization of health care services provided by physicians. While for some health issues there is a consistent relationship between the number of patients, the number of patient/physician encounters, and expenditures, for other conditions the relationship is more complicated. For instance, consistency was observed for diseases of the nervous system and sense organs, which accounted for 10% of all patients seen on an annual basis, 10% of all patient/physician encounters, and 10% of all annual expenditures. In contrast, pregnancy accounted for 4% of all patients annually, but resulted in 6% of all patient/physician encounters, and consumed 10% of annual expenditures. Diseases of the skin provided another example of the complexity as these conditions accounted for 7% of all patients, but only 5% of all patient/physician encounters, and only 3% of all annual expenditures.

These variations demonstrate that different health conditions have different impacts on the utilization of health services. Simply looking at the number of people utilizing health services is not sufficient to gain a full picture of the factors that drive the use of physician services.

Figure 3.5.1.1
Per Capita Costs by Cause – Seniors vs Total Population
Annual Average 1994/95 to 1998/99



Sources: Department of Health and Social Services and NWT Bureau of Statistics

Age is also a significant factor, which interacts with the type of condition in determining the demand for physician services. Figure 3.5.1.1 compares the costs of providing physician services to those 65 years of age and older, by disease type, with the overall per capita costs in the general population. The average per capita cost for physician services to those 65 and older with nervous system and sense organ conditions was $93, compared to only $24 for the general population. Similarly, there was almost a 600% difference in the cost of providing services to seniors with circulatory disease, $76 versus $11 per capita for all ages.

The higher costs associated with provided care for seniors have significant implications for the health care system in the Northwest Territories, as they forewarn of increased fiscal pressures as the population ages.

3.5.2 Future

Using a projection model based on anticipated population growth, population aging, and inflation, annual costs for physician services are projected to reach $23.5 million by 2020. This projection reflects a growth rate of 100% over 20 years, or roughly 4% per year for physician services. Because of the significant aging of the population, especially those age 65 and over, some diseases or conditions will figure more prominently in the future than they have in the past.

As seen in Figure 3.5.1.1, conditions such as circulatory diseases, musculoskeletal system and connective tissue diseases were much more prominent in the senior population. As Table 3.5.2.1 shows, these same conditions are projected to be among the fastest growing diseases in the Northwest Territories. In contrast, such age-related conditions as childbirth and pregnancy decrease in prominence by 25% in terms of proportion of cost by reason for physician services.

Table 3.5.2.1
Projected Estimates of Total Physician Costs
Northwest Territories 2020/21

Reason	Expenditure	%	Change from 1994/95-98/99 Dollars	Proportional
Nervous System and Sense Organs	$2,123,871	9.0%	114%	7%
Respiratory Diseases	$1,890,396	8.0%	91%	-5%
Injury and Poisoning	$1,758,994	7.5%	89%	-6%
Digestive System	$1,734,400	7.4%	106%	3%
Musculoskeletal System	$1,619,119	6.9%	128%	14%
Mental Disorders	$1,577,221	6.7%	84%	-8%
Childbirth and Pregnancy	$1,442,989	6.1%	50%	-25%
Circulatory System	$1,421,249	6.1%	206%	53%
Genitourinary System	$1,411,724	6.0%	88%	-6%
Other	$5,056,393	21.5%	107%	3%
Supplementary	$3,455,137	14.7%	95%	-3%
Total	**$23,491,493**	**100.0%**	**101%**	

Notes: Numbers are long term forecasts and therefore, subject to future revisions.
Sources: Department of Health and Social Services and NWT Bureau of Statistics

As discussed in Section 7.0 of Appendix 3, when forecasting future costs not all factors can be directly quantified. The present shortage of available physicians and high demand for physicians in northern and rural Canada will affect the costs of physician services in the short term. Rural and northern areas face stiff competition for physicians amongst themselves (e.g., Yukon versus the Northwest Territories) and with urban and southern jurisdictions. Undoubtedly, most of the conventional means available to attract physicians are monetary in nature – be it a competitive salary or improved working conditions (i.e., more support staff, shorter hours or smaller case-loads). However, it is difficult to estimate the impact of this demand for physicians on the cost of physician services 20 years from now.

CHAPTER 4

Health Centres and Public Health Units

The Northwest Territories is a geographically and socially complex jurisdiction. This presents particular challenges for the equitable provision of health care to residents. Although approximately 70% of northerners live in five communities with full-time physician services, the remaining 30% live in 28 relatively small communities without physician-based clinics or hospitals. As a result, the northern health care system relies heavily on services provided in community health centres and public health units.

This chapter provides an overview of those services, as measured in the Department's Community Health Management Information System (CHMIS)[32]. The scope of services examined range from routine public health activities (i.e., health promotion and immunization), to the diagnosis and treatment of disease, and primary management of medical emergencies and trauma.

The chapter begins with a demographic analysis (i.e., sex and age) of the use of community health services by individual patients. Then, the reasons behind the use of services by individuals is examined, followed by an examination of services provided to groups – when more than one client is served at a time. Finally, a set of projections on the future demands of community health centres and public health units is presented.

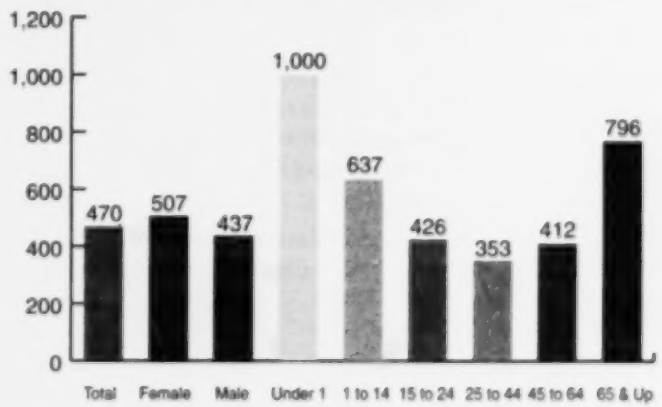
4.1 Individual Patients

Between 1994/95 and 1998/99, the average cost of operating NWT health centres and public health units was estimated at $10.4 million.[33] Of this amount, 78% or $8.1 million accounted for the provision of services to individual patients.

The important role that community health services play in the NWT health care system is underscored by the fact that an average 19,500 residents visited health centres and public health units as individual patients each year, with the average number of visits totaling 107,000. This activity represented slightly under 50% of the population who accessed community health services annually, on average 5.5 times each.

Figure 4.1.1 shows the number of patients per 1,000 population by age group. The age groups in which the largest proportion of persons used services were at

Figure 4.1.1
Patients per 1,000 by Sex and Age Group
Annual Average 1994/95 to 1997/98



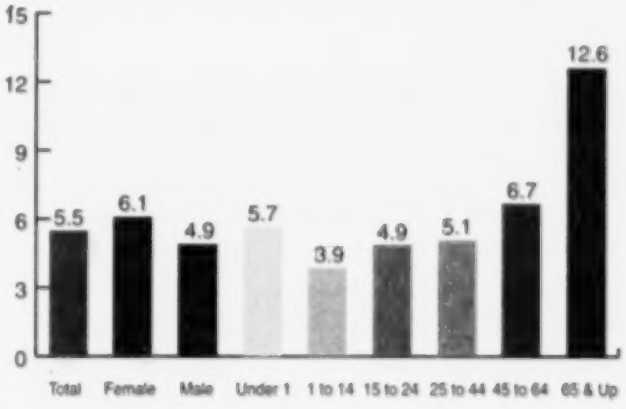
Sources: *Department of Health and Social Services and NWT Bureau of Statistics*

32 Only four years of data, 1994/95 to 1997/98, were available from CHMIS to be used in this chapter. See Appendix 3, Section 4.5 for further details.
33 Internal estimates from Department of Health and Social Services, Financial and Management Services Division.

opposite ends of the age spectrum. Virtually all infants receive a service, usually public health, from a health centre or public health unit.[34] While 637 per 1,000 children (64%) and 796 per 1,000 seniors (77%) used community health services annually, seniors visited with 3 times the frequency of children. Approximately 40% of the population age 15 to 64 used health centres annually, although they used the services with greater frequency than children and lesser frequency than seniors. Reasons for visits will be examined later in this chapter but, in general, children are heavy users of public health services, especially for childhood immunizations and common childhood diseases. Seniors, on the other hand, visit for reasons associated with chronic diseases, many of which require on-going care.

Women accounted for 57% of all visits. As can be seen in Figure 4.1.2, the difference between women and men was attributed mainly to frequency of visits: women 6.1 versus 4.9 for men. The cost per visit for men and women was very close, at an average of $76, and did not vary greatly between age groups. Cost is directly related to service event time[35] so the average length of a visit (27 minutes) was fairly consistent between sex and across age categories.

Figure 4.1.2
Visits per Patient by Sex and Age Group
Annual Average 1994/95 to 1997/98



Source: Department of Health and Social Services

As in the case of hospital care, sex differences are, in part, due to pregnancy and post-childbirth needs. About 5% of all visits by women were for prenatal assessments and routine post-partum (after giving birth) care. A further 1% of visits by women were related to both normal and/or complicated pregnancies and childbirths. Reported visits in the latter category occurred almost exclusively at health centres in the small communities and the average length of a visit was three times the 27 minutes of an average visit length.

Figure 4.1.3 provides an estimate of cost per capita based by sex and age group. Per capita measurements divide the cost of services by the population receiving them. On average seniors received over three times the amount of community health services relative to the total population. Although seniors represent less than 4% of the population, they accounted for 13% of visits.

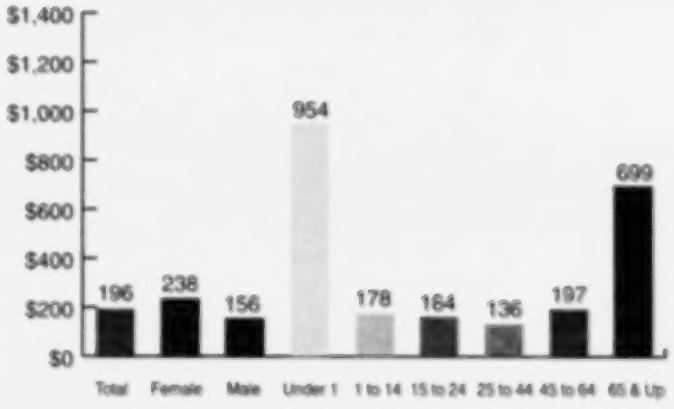
Approximately 30% of the population resides in communities without full-time physician services. In total, the ethnic makeup of those communities is approximately 87% Aboriginal and 13% Non-Aboriginal. As a result, the Aboriginal population relies heavily on primary care delivered through community health centres.

Approximately 70% of the Aboriginal population visited a health centre at least once each year, versus 29% of the Non-Aboriginal population. In addition, Aboriginal clients visited 7 times per year on average versus 2.7 for Non-Aboriginal. Annually, Aboriginal residents accounted for 65% of patients, and 83% of all visits to health centres and public health units.

34 In Figure 4.1.1, the rate of 1,000 per 1,000 infants is an estimate. See Appendix 3, Section 4.1, for problems associated with rates and single years of age.
35 See Appendix 3, Section 4.3 for details on time and cost estimations.

Health centre and public health unit utilization also varied by community type. In communities without local physicians, over 80% of the population visited a health centre annually, on average 8 times each. For the population in Yellowknife and regional centres with local physician services, 30% utilized community health services, mainly through public health units, on average 2.2 times each. Finally, as a result of the significantly higher utilization of community health services in the smaller communities, 82% of all visits occurred in the communities other than Yellowknife and the regional centres.

Figure 4.1.3
Cost per Capita by Sex and Age Group
Annual Average 1994/95 to 1997/98



Sources: Department of Health and Social Services and NWT Bureau of Statistics

4.2 Reasons for Individual Visits

This section examines the primary reasons for visits to a health centre or a public health unit. Since there are distinct differences in the services provided, each facility type is discussed separately. In general, health centres provide a significant amount of primary care services, while also fulfilling a public health role. On the other hand, public health units, which are located in communities with a physician-centred model of primary care, focus almost exclusively on public health activities and, therefore, participate in primary care to a lesser degree.

Of the average $8.1 million spent on services to individual patients, $4.9 million was accounted for in primary care (treatment of medical conditions), and $3.2 million was spent on public health activities.[36]

4.2.1 Health Centres

Over 80% of all services reported in CHMIS occurred in health centres. The combined demands of primary care and public health are presented in Figure 4.2.1.1 for broad categories making up 4% or more of total time.

Approximately two-thirds of the resources of health centres were directed at primary care services, with the remainder dedicated to public health activities.

Similar to hospitals and physician activity, much of the resources of health centres were dedicated to services that were not grouped under a known or suspected illness or condition. For community health services, this category is referred to as "follow-up" and was the largest area of primary care demand. Contact tracing associated with communicable diseases accounted for 13% of the time captured under "follow-up".

36 For the purposes of this discussion, the public health activity classified as 'follow-up' has been re-allocated to the primary care category. These were follow-up services to a broad spectrum of previously diagnosed problems affecting health.

Next, in descending order, were diagnostic or treatment services for the following conditions: respiratory diseases, injury and poisoning, nervous system diseases, and diseases of the digestive system. Each of these four conditions illustrate a wide variety of problems or needs, as seen in Table 4.2.1.1.

For people diagnosed with a respiratory disease, over 60% had acute respiratory tract infections, including colds, tonsillitis and bronchiolitis. A further 10% involved either diagnosis of pneumonia or influenza, and 10% involved bronchitis, asthma, or chronic obstructive pulmonary disease (COPD).

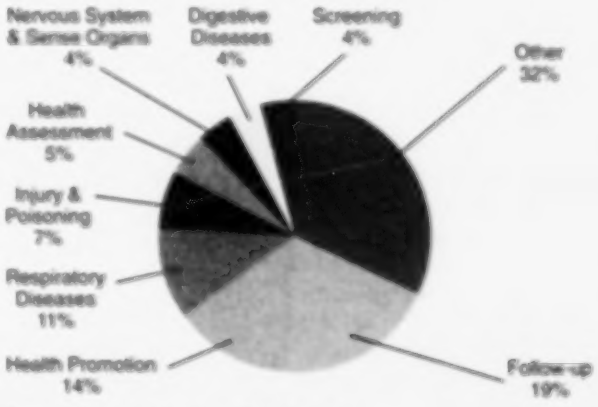
The top three problems in the injury and poisoning category included treatment of open wounds, sprains and strains, and traumatic complications. These three represented over 50% of all services reported in this category.

Over half the time spent on diseases of the nervous system involved middle ear infections. Eye infections and irritations accounted for a further 11% of services related to the nervous system. Migraine headaches accounted for about 5% of staff time.

Finally, amongst diseases of the digestive system, the most frequent service time requirement was due to tooth abscesses or other dental problems. This is an indicator of the poor state of dental health in many Northwest Territories communities, a problem that had already been highlighted in *The NWT Health Status Report 1999*. Dental problems were followed by stomach and intestinal problems, including gastritis and gastroenteritis.

In health centres, public health services annually accounted for about 33% of total individual services. Of this time, the single largest activity was health promotion. The next three public health activities were health assessment, screening services and

Figure 4.2.1.1
Health Centres – Service Use by Top Cause
Annual Average 1994/95 to 1997/98



Source: *Department of Health and Social Services*

Table 4.2.1.1
Health Centres
Top Conditions Known or Suspected
(Details by Proportion of Time)
Annual Average 1994/95 to 1997/98

Rank	Conditions – Known or Suspected	Proportion of Time Within Each Condition
1	*Diseases of the Respiratory System*	
	Respiratory Tract Infections	60%
	Pneumonia and Influenza	10%
	Bronchitis, Asthma or COPD	10%
	Other	20%
2	*Injury and Poisoning*	
	Open Wounds	22%
	Strains and Sprains	17%
	Traumatic Complications	16%
	Other	45%
3	*Diseases of Nervous System & Sense Organs*	
	Middle Ear Infections	54%
	Eye Infections/Irritations	11%
	Migraine Headaches	5%
	Other	30%
4	*Diseases of Digestive System*	
	Dental Problems	28%
	Gastroenteritis	19%
	Gastritis	12%
	Other	41%

Notes: COPD = Chronic Obstructive Pulmonary Disorder
Source: Department of Health and Social Services

individual counseling. Table 4.2.1.2 presents a breakdown of what makes up each one of the four main areas of public health services found in health centres.

The top three categories of health promotion were self-care practices, parenting skills and good nutrition practices. The health promotion activities represented here only capture individual client-provider interactions that are targeted at people most in need, and dedicated to discussion of specific topics to improve health and well-being. This is in addition to information and advice on personal health practices that is part of most interactions between clients and health professionals. Also, as seen in Table 4.3.2.1, health promotion activities often occur in "group" settings (i.e., prenatal classes).

The top three activities under health assessment included general health assessments, monitoring of pregnancy, and assessments of prenatal nutrition status.

Table 4.2.1.2
Health Centre
Top Public Health Activities (Details by Proportion of Time)
Annual Average 1994/95 to 1997/98

Rank	Public Health Activity	Proportion of Time Within Each Activity
1	*Health Promotion*	
	Self-Care	49%
	Parenting	12%
	Nutrition	11%
	Other	28%
2	*Health Assessment*	
	General Health Assessment	51%
	Pregnancy (Low Risk)	16%
	Prenatal Nutrition	11%
	Other	12%
3	*Screening*	
	TB Screening	23%
	HIV, Hepatitis C, PKU	22%
	Cervical Cancer	18%
	Other	37%
4	*Counseling*	
	Individual and Family Support	49%
	Family Planning	31%
	Parenting	15%
	Other	5%

Note: PKU=Phenylketonuria
Source: Department of Health and Social Services

Approximately half the time spent on screening for diseases was split between tuberculosis screening and screening for HIV, Hepatitis C and PKU[37]. Screening for cervical cancer (pap smears) accounted for a further 18% of the time spent on screening activities. Other activities within this category, accounting for a smaller proportion of time, included vision tests, hearing tests and childhood developmental tests (Denver).

Counseling in health centres was aimed at helping people cope with difficult situations and/or important life decisions. Just under 50% of the time spent on counseling was for individual and family support. About 33% of the time was spent on family planning and most of the rest of the time was devoted to parenting issues.

4.2.2 Public Health Units

Figure 4.2.2.1 illustrates public health unit services by category, as a proportion of total service time. Four of the five top activities were health promotion, immunization, health assessment, and screening procedures. Combined, these four broad areas together accounted for 71% of all reported service time to individual patients. The fifth top activity was "follow-up". In contrast to health centres, "follow-up" consisted of more communicable disease contact tracing, although just over half of this activity was spent on the ongoing surveillance of conditions which were not detailed.

Health promotion was the largest area of public health unit activity. The top three categories of health promotion included self-help practices, communicable disease education and education on good nutrition practices.

37 A routine blood test performed on newborns to identify children with phenylketonuria, a disease requiring early diagnosis and a modification of diet.

The next largest activity was immunization services. The largest component within this category was the immunization of children against various diseases, between birth and age six. Immunization services are presented by age in Table 4.2.2.1. There are too many types of immunizations to allow a detailed analysis within the scope of this report. However, immunization services are directed at prevention of many diseases including influenza, diphtheria, pertussis, polio, tetanus, TB, hepatitis B, bacterial meningitis and others.

Health assessment was the next most common activity, mainly consisting of general health assessments, post-partum care up to 6 weeks and developmental assessments of kindergarten-aged children.

Developmental testing for children (Denver Tests) was the most prominent screening activity, followed closely by tuberculosis screening. Hearing tests were third, accounting for less than 20% of screening activity.

Figure 4.2.2.1
Public Health Units – Top Reasons for Services
Annual Average 1994/95 to 1997/98

Source: Department of Health and Social Services

Table 4.2.2.1
Public Health Units
Top Public Health Activities (Details by Proportion of Time)
Annual Average 1994/95 to 1997/98

Rank	Public Health Activity	Proportion of Time Within Each Activity
1	Health Promotion	
	Self-Care	27%
	Communicable Diseases	20%
	Nutrition	18%
	Other	35%
2	Immunization	
	Age 0 to 6	39%
	Age 7 to 14	28%
	Age 15-64	30%
	Age 65+	4%
3	Health Assessments	
	General Health Assessment	64%
	Post-Partum Care to 6 Weeks	15%
	Kindergarten Assessment	3%
	Other	3%
4	Screening	
	Developmental Tests	29%
	TB Screening	28%
	Hearing Tests	18%
	Other	25%

Notes: PHU=Pharmacokinetics
Source: Department of Health and Social Services

4.3 Administration and Group Services

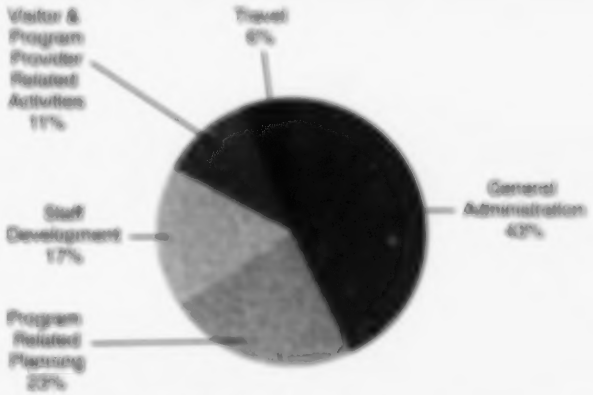
Approximately 19% of reported time was accounted for in administration and the provision of group services. This time accounted for about $1.9 million dollars of the $10 million average annual costs of operating community health centres and public health units.[16] The majority of this time (62%) was for administration, which included day-to-day administrative duties, program related planning and preparation and staff development. The remaining time (38%) was for the provision of various services in "group" or community settings. Generally, these services included health promotion and general public health activities.

16 In addition to individual and group services, a small portion of health centre services were taken up by out of territory patients (visitors and former residents now part of Nunavut) as well as patients where their residency was unknown.

4.3.1 Administration

As shown in Figure 4.3.1.1, the top administrative activities, in terms of time reported, were general administrative duties (i.e., day to day paperwork) at 43%, program related planning at 23%, and staff development at 17%. Unfortunately, there is no further detail available on the nature of these activities.

Figure 4.3.1.1
Health Centres and Public Health Units
Administration by Type of Activity
(Proportion of Time)
Annual Average 1994/95 to 1997/98



Source: Department of Health and Social Services

4.3.2 Group Services

Despite the relatively small proportion of time dedicated to group services, an average of 16,000 patients were reported as receiving services in a group setting each year. Since a group is made up of several individuals, client specific information cannot be extracted from this category. However, the type and number of group sessions can be detailed.

There were approximately 2,100 reported annual group sessions, attended by an average of eight persons each. Of those sessions, 1,400 occurred in health centres and 700 in public health units. Regardless of facility type, the average session length was reported at just under one hour (56 minutes).

In terms of time, the top two "group" activities were health promotion (48%) and general public health activities at (36%). Table 4.3.2.1 provides some finer detail on the nature of the activities within each of these two broad categories.

The prominent group services in both facility types were concentrated in health promotion activities. For health centres and public health units, all the categories of group services are presented in the Table.

Table 4.3.2.1
Health Centres and Public Health Units
Group Services by Type of Activity
Annual Average 1994/95 to 1997/98

Rank	"Group" Services Activity	Proportion of Time for Each Activity
1	Health Promotion	
	Self Care/Self Help Practices	12.4%
	Prenatal	12.0%
	Family Life	7.9%
	Communicable Diseases	7.0%
	Nutrition	6.2%
	Dental Health	5.3%
	Safety	4.2%
	Parenting	3.8%
	Mental Health	2.3%
	Substance Abuse	2.2%
	Environmental and Food Hygiene	1.2%
2	General Public Health Activities	
	Community Liaison	33.8%
	Environmental Surveillance	10.2%

Note: Preparation time for Health Promotion Activities has been proportioned across each particular activity.
Source: Department of Health and Social Services

Health promotion activities are broad in scope with some overlap of topics covered within these categories. The following is a brief description of some of the issues tackled within two categories of health promotion: self-care practices and family life education. Self-care practices group sessions included the provision of information and/or skill development in a wide variety of health areas, such as active living, breast self-examination, stress control techniques and tobacco cessation techniques. Family-life group sessions included topics such as sexuality and safe-sex practices, family planning, stress in family life and domestic violence.

4.4 Conclusion

Health centres and public health units are an integral part of the Northwest Territories health care system. Health centers, in particular, are the first point of contact with the health system for approximately 30% of the population. Health centres serve dual roles by delivering primary care and public health services. Public health units, located in communities with a physician-centred model of primary care, are almost exclusively focused on public health programs.

4.4.1 The Present

Similar to the analysis of other sectors of the health system discussed in this report, health centres and public health units face some of the same demands for services. For instance, within primary care, conditions such as respiratory diseases and injuries and poisonings were prominent. Age is again a factor in understanding demand, with seniors, on a per capita basis, using up to three times the amount of services as did the general population.[19]

Since more than 80% of the activity examined in this chapter occurred in a health centre, it is not surprising that analysis by community type is not particularly meaningful. And, given that the majority of the population in other communities is Aboriginal, analysis by ethnicity is also relatively unhelpful.

4.4.2 Future Demand

In total, resources required to run health centres and public health units are expected to double over the next 20 years. In contrast to hospitals, the costs for health centres and public health units will be less affected by the aging population. Aging will account for an estimated 11% of growth, behind population growth (24%) and inflation (1.5% per annum) which account for the remaining 65%. While age remains an important variable, patients do not usually spend more than a half an hour, on average, for each visit, regardless of age. Although seniors visit a health centre with greater frequency, the impact on cost is not as significant compared to a hospital setting.

Table 4.4.2.1 presents projections of the conditions that will likely dominate health centres and public health units in 20 years. Public health activity, if continued in the same manner as in the past, will grow at a marginally higher rate than total health centre and public health unit costs. Projections of demand for public health services are not broken out by sub-category (e.g., counseling or health promotion) because the services are management driven, as opposed to demand driven, and therefore subject to variations of priority afforded to prevention activities by management and staff.

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19 See Figure 4.1.3, Per Capita Cost by Sex and Age Group.

By the year 2020, patients with respiratory diseases are estimated to account for the largest amount of primary care resources required from health centres and public health units, at 22% of all expenditures on individual patients. Injury and poisoning remain a distant second, accounting for 14% of total resources for individual patients.[40] The next two conditions are diseases of the digestive system and diseases of the nervous system and sense organs, both at 9%.

Public health activity, however, can have a substantial impact on the nature of the demand for treatment of medical conditions. For instance, effective immunization programs are the most cost-effective public health activity available. Screening and preventive programs for communicable and non-communicable disease control,[41] supported by resources for appropriate follow-up, reduce the demand for difficult and costly medical treatment. In addition, personal lifestyle choices have a strong impact on health status. Health promotion with respect to diet, exercise and tobacco cessation can help to reduce the incidence of many diseases that may otherwise overwhelm our health care system, including cancer, cardiovascular disease, respiratory disease and diabetes.

Table 4.4.2.1
Health Centres and Public Health Units
Primary Care – Projected Top Conditions
Northwest Territories 2020/21

Condition	Expenditure
Respiratory Diseases	21.8%
Injury and Poisoning	13.5%
Digestive Diseases	9.0%
Nervous System and Sense Organs	9.0%
Skin and Subcutaneous Tissue	7.6%
Musculoskeletal System and Connective Tissue	5.8%
Genitourinary System	5.7%
Other	27.7%

Notes: Numbers are long term forecasts, and therefore, subject to future revisions.
Sources: Department of Health and Social Services and NWT Bureau of Statistics

The potential for public health campaigns to lessen the burden of disease is substantial, and more preferable to expensive treatment that often does little to improve quality of life. As individuals become more knowledgeable about health and disease prevention, they will also be more receptive to positive public health messages. Nevertheless, it remains a challenge to garner the necessary share of health resources to further develop and maintain our public health capacity. In the future, health centres and public health units will likely retain a major portion of the responsibility for public health activity.

40 Group activity is excluded from the projections since the individuals who receive services in a health centre or public health unit cannot be identified by age, sex and, to some extent, community type. As detailed in Appendix 3, Section 7, age, community type, and sex are all key factors in the development of population projections.
41 For example: breast cancer screening, tuberculosis screening, pap tests, prenatal screening, sexually transmitted disease diagnosis, treatment and contact tracing, and immunization programs directed at high-risk individuals.

CHAPTER 5

Medical Travel

Over 66% of the population of the Northwest Territories lives in a community with a hospital, or within a short trip of one. Consequently, medical travel consumes a lesser proportion of the overall health care expenditures. However, medical travel remains a critically important service in the north, allowing residents of remote and isolated communities to access medical services in larger centres.

Medical travel includes all forms of transportation used for medical reasons, paid by the public health care system. The modes of travel can include ground (taxi, ambulance, private vehicle) and air (scheduled or chartered). Generally, medical travel can be divided into two types urgent (charter or ambulance) and non-urgent (scheduled or taxi). There are some exceptions where a taxi may be used in an emergency or where a chartered flight is the only type of air travel available in a remote community.

This chapter provides a comparative analysis of the utilization of medical travel and costs. It does not present an accounting of dollars spent on medical travel. To accomplish this, it was necessary to rely on an administrative database, which captures only a portion of total medical travel expenditures in any given year. Further, the figures reported are average values derived from the period 1994/95-1998/99.

The chapter begins with an examination of all medical travel, followed by a comparison of emergency and non-emergency travel. A summary of results is then presented, along with a look toward the future demands on medical travel services.

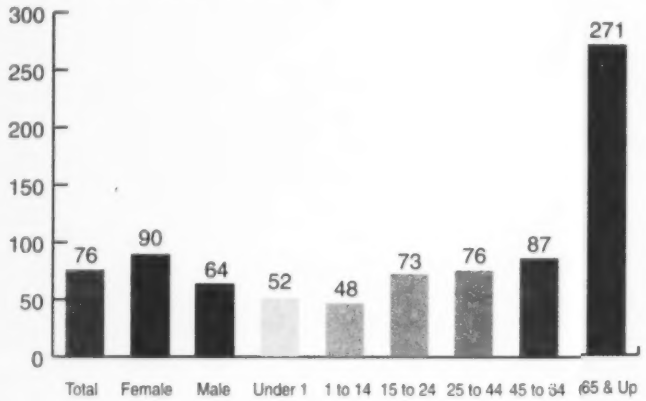
5.1 All Medical Travel

On average, approximately 3,200 patients used medical travel each year for an annual cost of $5.8 million.[42]

Approximately 56% of the patients were women and accounted for about 52% of the costs. Women made up about 48% of the population between 1994/95 and 1998/99. However, when medical travel due to pregnancy and childbirth was removed, the proportion of travel by women falls much closer to the proportion of women in the general population.

As with all other types of health services, medical travel costs vary the most by age (Figure 5.1.1). Relative to their population base, the senior population travels

Figure 5.1.1
Patients Using Medical Travel per 1,000
Annual Average 1994/95 to 1998/99



Sources: Department of Health and Social Services and NWT Bureau of Statistics

42 Financial figures include the cost of escorts.

more than any other age group. On average, 271 per 1,000 seniors (27%) used medical travel. This rate for seniors was over 3 times the rate of 76 per 1,000 (7.6%) for the population as a whole. The next highest rate was for the population age 45 to 64. Children, age 1 to 14 years, were the least likely to require medical travel services. Moreover, in contrast to other health service areas, infants, under one year of age, had one of the lowest rates of use of medical travel, at 52 patients per 1,000.

In terms of cost per capita, the senior population was well over four times the rate for the total population. The average per capita medical travel expenditure was $634 for the population age 65 and over compared to $140 for all ages. And, similar to other health service areas, infants were also high on a per capita basis at over $300.[43]

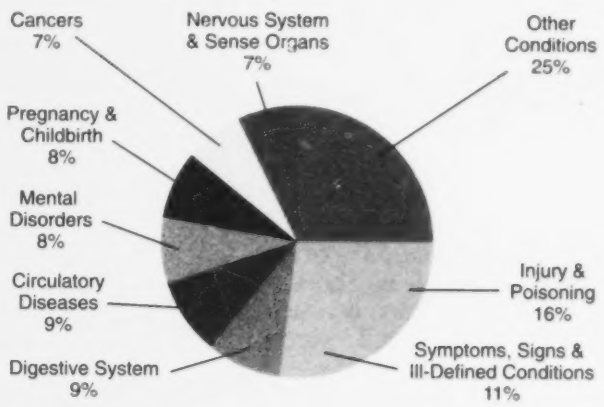
In terms of community type, 62% of all medical travel patients were from non-hospital based communities, compared to less than 25% from regional centres, and 14% from Yellowknife. Only 25 per 1,000 (2.5%) people from Yellowknife used medical travel services, compared to 143 per 1,000 (14%) in other communities.

The majority of patients traveled within the territory with only 27% per annum traveling outside of the territory. However, due to higher costs, travel outside of the territory accounted for 48% of total medical travel costs.

It is difficult to identify the number of patients requiring medical travel by specific medical conditions. Often a patient is sent out of a community with a general symptom and not an exact diagnosis. Once the patient has been treated at the hospital, a more accurate diagnosis is made. However, the cause for medical travel can be examined by the associated costs of that travel.[44]

As shown in Figure 5.1.2, eight broad diagnostic categories accounted for 75% of the costs of medical travel where a medical condition was known or suspected. The eight were injury and poisonings, symptoms, signs and ill-defined conditions[45], digestive system diseases, circulatory diseases, mental disorders, pregnancy and childbirth, cancers, and diseases of the nervous system and sense organs.

Figure 5.1.2
Cost of All Medical Travel by Cause
Annual Average 1994/95 to 1998/99



Source: Department of Health and Social Services

Although potentially 100% preventable, injury and poisoning ranked highest in terms of costs, though only third highest in terms of number of patients. This is not surprising given the urgent need for care that often follows an injury, resulting in immediate transport. Various fractures represented approximately 38% of the cost of all medical travel due to injury and poisoning.

43 When measured by costs, infants made up a larger proportion of emergency travel (7%) than non-emergency travel (2%).
44 See methodology for further details (Appendix 3, Section 5.3).
45 Symptoms, signs and ill-defined conditions is included in this chapter since the reason for medical travel is often not known until the patient receives a diagnosis later in a hospital. Thus, it is not unusual for patients to leave their community or the territory with one diagnosis and to return home with a different diagnosis.

The broad category of symptoms, signs, and ill-defined conditions was second in terms of number of patients and proportion of total costs. This is not unusual given that the reason for medical travel in the first place is often vague, with the patient exhibiting problems that are hard to pin point as being a specific condition. However, some clues to what the general problems may have been can be obtained through a more detailed analysis.

The highest cost area was respiratory and chest symptoms at 23%, followed by abdominal and pelvic problems at 22%, and general symptoms at 21% of costs for symptoms, signs and ill-defined conditions. The largest cost area for general symptoms was convulsions (seizures).

Diseases of the digestive system and diseases of the circulatory system were third and fourth in terms of proportion of costs. Digestive system diseases mainly included problems with intestines and gall bladders at 40%, and dental conditions at 36% of the total costs for digestive diseases. For circulatory diseases, 75% of the cost of medical travel was due to heart-related problems.

As a reason for travel, respiratory diseases did not rank as high as for hospitals, physician care, and health centres and public health units. It accounted for 6% of travel costs, right behind diseases of the nervous system and sense organs. Because the reason given for travel is not always conclusive, travel due to respiratory diseases is likely understated. For example, 2.6% of the cost of all travel was due to respiratory and chest symptoms but was classified under the category of symptoms, signs and ill-defined conditions.

When a reason was given for why the patient was required to travel outside of their home community, the catchall category of supplementary classifications was used most frequently. Over 700 patients were classified as travelling for this reason, resulting in an average annual cost of about $840,000. It is not surprising that supplementary classification was the top reason, given that it was also the top reason for the use of both hospital and physician services. As seen below, the services grouped under this classification were used by patients for problems, real or suspected, that were defined by the other 17 classifications.[46]

Over 75% of the cost of travel categorized as supplementary classification fell within one of the following three groups: special investigations and examinations, aftercare, or follow-up examinations. Half of the costs of the first category were taken up by unspecified exams, followed by x-rays or diagnostic exams at 26%, and dental exams at about 16%. For aftercare, 99% was due to orthodontics. Finally, around 80% of follow-up examinations were due to unspecified follow-ups, surgery, and other treatment follow-up examinations.

Dental exams and orthodontics are a good example of how activity within supplementary classifications is related to another disease classification. These two may be related to dental issues within the classification covering diseases of the digestive system. Moreover, much of the activity within supplementary classifications was also for x-rays, often necessary in order to assess the degree of damage as a result of an injury, but may also be used to assess problems with one's jaw or teeth.

5.2 Urgency of Travel

Emergency medical travel for residents of the Northwest Territories is mostly done through chartered aircraft and ambulances. While a relatively small proportion of people need emergency care, the resulting cost is high. By contrast, most non-emergency travel is by way of a scheduled flight or taxi service. Non-emergency travel is relatively less expensive, though more widely used than emergency travel.

46 See Appendix 3, Section 1.7, for a description of these classifications.

5.2.1 Urgency of Travel by Demographics and Geography

Approximately 28% of the patients who required medical travel did so in emergency circumstances. Emergency travel resulted in approximately 40% of medical travel expenditures – not including the cost of the return portion of their travel (scheduled flight or taxi).

In general, no significant differences were noted between the use of emergency and non-emergency travel along demographic and ethnic variables. However, infants required emergency travel more often than they did scheduled travel. Community type did not vary significantly between emergency and non-emergency travel, nor was there much difference in the amount of travel within or outside the territory in terms of its urgency.

The variance in the cost per patient of travel outside of the territory when compared to within the territory was much higher for emergencies than it was for non-emergencies. For emergency travel, the average per patient cost was nearly $5,900 for out of territory, nearly four times higher than the $1,550 for in territory. For non-emergency travel, the average per patient cost was under $2,100 for out of territory, less than three times the $862 for within the territory.

The real variance in the nature of emergency versus non-emergency travel was due to the medical condition. As seen below, some medical conditions generally require more urgent care than others.

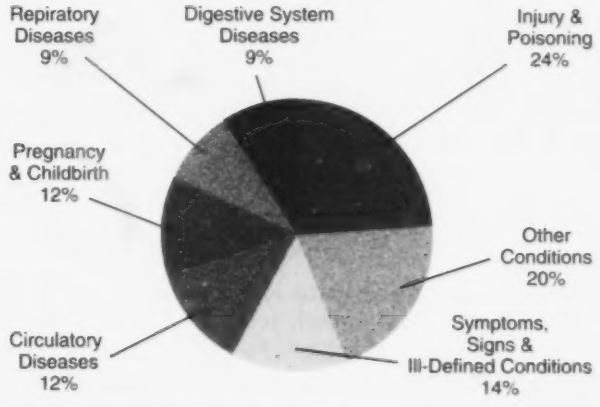
5.2.2 Emergency Travel by Cause

As seen in Figure 5.2.2.1, when measured by cost, the top two causes for emergency travel were injuries and poisonings and symptoms, signs and ill-defined conditions. Circulatory disease was third in terms of costs, though it was sixth in terms of the number of patients. Pregnancy and childbirth was fourth, followed by respiratory and digestive system diseases.

As seen in Table 5.2.2.1, fractures accounted for over a third of the costs of injuries and poisonings. Approximately 13% was due to poisoning by drugs, medical and biological agents, and less than 10% was due to trauma and other unspecified injuries.

It is not surprising that injury and poisoning were the main causes for emergency medical travel as they occur in a short period of time, and care is required immediately. By contrast, they accounted for relatively less scheduled or non-emergency travel.

Figure 5.2.2.1
Cost of Emergency Medical Travel by Cause
Annual Average 1994/95 to 1998/99



Source: Department of Health and Social Services

Similar to injury and poisoning, symptoms, signs and ill-defined conditions also ranked relatively higher for emergency travel than for non-emergency. The top three conditions for this classification were respiratory difficulties and chest pains (symptoms) at 32% of costs, followed by abdominal pain and pelvic symptoms at 23%, and general symptoms at 22% of costs. For emergency travel under the broad category of general symptoms, convulsions were by far the main reason, followed by fever.

Circulatory disease was third in costs but was ranked sixth for number of patients. However, after symptoms, signs and ill-defined conditions, no one reason for travel accounted for more than a hundred patients. Approximately 80% of the emergency travel due to circulatory disease was due to heart disease.

Table 5.2.2.1
Emergency Travel for Injury and Poisoning – Proportion of Costs
Annual Average 1994/95 to 1998/99

Reason	Cost
Fractures	35.9%
Poisoning by Drugs, Med. and Bio. Agents	12.5%
Trauma and Unspecified Injuries	9.4%
Open Wound of Head, Neck, and Trunk	5.8%
Injury to Blood Vessels	5.8%
Dislocations	5.4%
Other	18.2%

Source: Department of Health and Social Services

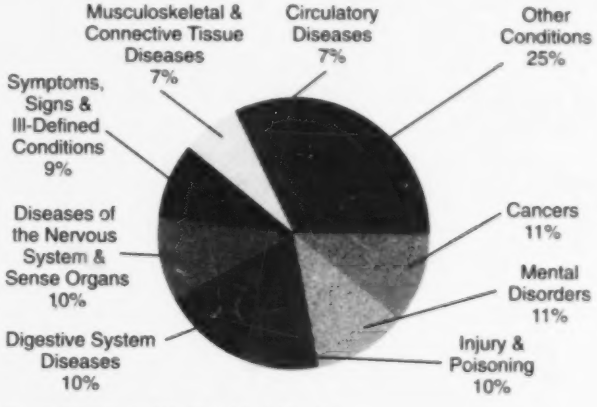
Pregnancy and childbirth accounted for over 12% of the cost of emergency travel, and approximately 10% of all patients. Most of this medical travel was due to a complication during pregnancy or childbirth – 62% of the costs were due to premature labour. Given the urgent need for medical services at the time of childbirth, it is not surprising that this was one of the top causes for emergency travel. As expected, it is relatively low on the list for causes of scheduled or non-urgent medical travel.

5.2.3 Non-Emergency Travel by Cause

It terms of the non-emergency travel, as measured by cost, the top five categories were as follows: cancers, mental disorders, injury and poisoning, digestive system diseases, and diseases of the nervous system and sense organs. Combined, these five categories accounted for over 50% of the travel costs, and 64% of patients, where a diagnosis was known or suspected. A large proportion of all non-emergency medical travel was categorized under supplementary classifications.

Cancer (neoplasms) was the highest in terms of cost but ninth in terms of patients, as a relatively large proportion of cancer treatments are done in southern Canada. Travel for cancer was spread out over a number of cancer types, making analysis difficult in a concise fashion within the context of this report.

Figure 5.2.3.1
Cost of Non-Emergency Medical Travel by Cause
Annual Average 1994/95 to 1998/99


Musculoskeletal & Connective Tissue Diseases 7%
Circulatory Diseases 7%
Other Conditions 25%
Symptoms, Signs & Ill-Defined Conditions 9%
Cancers 11%
Diseases of the Nervous System & Sense Organs 10%
Mental Disorders 11%
Digestive System Diseases 10%
Injury & Poisoning 10%

Source: Department of Health and Social Services

Mental disorders accounted for 11% of the costs and 17% of the patients travelling for a known or suspected condition – 368 patients per year, on average. As seen in Table 5.2.3.1, just over 50% of the cost of all non-emergency medical travel due to mental disorders was patients with an alcohol and/or drug dependency. Other mental disorders included depressive disorders at a distant second with 12% of the costs, followed by other non-organic psychoses with 8% of costs. In contrast to hospitalization costs, where affective psychoses (manic and bi-polar) were the most expensive mental disorders, such psychotic conditions accounted for less than 4% of the cost of scheduled medical travel.

Table 5.2.3.1
Non-Emergency Travel for Mental Disorders by Cost
Annual Average 1994/95 to 1998/99

Reason	Proportion of Cost
Alcohol and Drug Dependency	51%
Depressive Disorder (NEC)	12%
Other Non-organic Psychoses	8%
Neurotic Disorders	6%
Non-Dependent Abuse of Drugs	5%
Schizophrenic Disorders	4%
Other	14%

Note: NEC = Not Elsewhere Classified.
Source: Department of Health and Social Services

Similar to other health services, much of the activity of non-emergency medical travel was not placed under a specific diagnostic classification. Supplementary classification captures the reason for travel when a specific condition was not indicated, though the service received was in support of a suspected or diagnosed medical condition. This broad category accounted for approximately 25% of the cost of all non-emergency medical travel and 18% of the patients. Within this broad category, over 75% of the cost of travel was for medical examinations or x-rays, aftercare, and follow-up examinations.

Medical conditions falling within the supplementary classification and under the category of medical examinations were 46% unspecified, 25% for chest x-rays and a further 20% for dental examinations. Under aftercare, 99% were for orthodontics work. And under follow-up examinations, 46% of costs were for unspecified follow-up exams or treatment. Another 32% of the costs were due to follow-up examinations after surgery.

5.3 Conclusion

5.3.1 The Present

Between 1994/95 and 1998/99, the demand for medical travel was driven by age, and by community type. As shown in Table 5.3.1.1, the per capita travel cost for all conditions was much higher for those 65 and older than with the population as a whole.

The home community of the patient was also relevant in determining demand for medical travel resources. Communities without hospitals use more medical travel than those without. While there may be some difference in the type of services people require depending on where they live, the effect of community type on medical travel is primarily due to the distance from hospitals, other health facilities, and specialized medical care. However, changes in the population of non-hospital based communities will have a greater effect on the demand and cost of medical travel than similar changes to the population of hospital-based communities.

Table 5.3.1.1
Medical Travel – Reason by Average Cost per Capita Seniors and Total Population

Reason	Age 65 And Over	All Ages per Capita	% Higher than Total Rate
Circulatory Diseases	$100	$11	823%
Symptoms, Signs and Ill-Defined Condition	$82	$14	503%
Injury and Poisonings	$72	$19	272%
Cancers	$66	$9	653%
Digestive System Diseases	$62	$11	455%
Nervous Systems and Sense Organs	$50	$8	526%
Respiratory Diseases	$37	$7	401%
Other	$97	$41	137%
Supplementary Classifications	$68	$20	235%
Total	**$634**	**$140**	**352%**

Sources: Department of Health and Social Services and NWT Bureau of Statistics

5.3.2 The Future

Current population projections suggest that the Northwest Territories' population will grow by 27% over the next 20 years. Growth in small communities is predicted to be 17%, as compared to 30% for Yellowknife and 37% for the regional centres. As with hospitals, physician services and health centres, most of the future demands on medical travel will be defined by the aging of the population as a whole.

By 2020/21 medical travel is projected to cost approximately $12.3 million per annum – $6.5 million more per annum compared to a five year historical average of approximately $5.8 million per annum. The three identified cost drivers, based on the model used to create this projection, are population increase, aging population and inflation. Inflation, set at a rate of 1.5% per annum, contributes to 53% of the cost increase, with the aging of the population contributing 26%, and population growth contributing the remaining 21%.

Injury and poisoning ranks the highest for medical travel in terms of projected costs. However, circulatory disease is projected to increase by over 200% from the fourth highest, between 1994/95 to 1998/99, to the second highest by 2020/21. Medical travel due to cancer is also projected to increase significantly, to fourth from seventh place. Given how these diseases disproportionately affect people later in life, and combined with the aging population of the Northwest Territories, it is predictable to see them increase in profile over the next 20 years.

While program changes and facility openings and closings have some of the biggest impacts on medical travel, such changes cannot always be anticipated. Moreover, there are a number of other potential cost drivers or cost reducers that cannot be quantified.

Table 5.3.2.1
Projected Estimates of Total Medical Travel Costs
2000/21

Reason	Expenditure	%	Change from 1994/95-98/99 Average Dollars	Proportional
Injury and Poisoning	$15,462,411	2.6%	94%	-9%
Circulatory System	$1,393,227	11.3%	209%	46%
Symptoms, Signs etc.	$1,224,943	10.0%	118%	3%
Cancers	$101,106	48.2%	181%	32%
Digestive System	$940,041	7.6%	102%	-5%
Nervous System and Sense Organs	$752,832	6.1%	125%	6%
Mental Disorders	$684,317	5.6%	74%	-16%
Respiratory Diseases	$639,885	5.2%	109%	-2%
Other	$24,949,162	0.3%	95%	-8%
Supplementary	$16,163,941	3.1%	93%	-9%
Total	**$12,303,860**	**100.0%**	**113%**	

Note: Numbers are long term forecasts, and therefore, subject to future revisions.
Sources: Department of Health and Social Services and NWT Bureau of Statistics

On the cost driver side of the equation, the projections are likely to be conservative for a number of reasons: technological change, rising patient expectations, and the unpredictability of inflation. Initially, the newest medical technology is more likely to be available in the south and then later, perhaps, in larger centres in the NWT, thus fueling the demand for medical travel. As discussed in Appendix 3, Section 7, rising expectations of patients for the latest technology and treatments is also likely to add to the demand for travel. Inflation, in particular rising oil prices, has a direct effect on the price of aviation fuels and ground transport fuels. For example, the oil and gas price increases since the last year of data used in this chapter will undoubtedly be passed on to the costs of medical travel.

Alternatively, lifestyle changes can reduce the incidence of illness and thus, reduce demand for medical services and medical travel. For example, improvements in diet, increased physical activity, and tobacco cessation all contribute to reducing the incidence and severity of illness (i.e., heart diseases, cancer, respiratory diseases), thereby reducing the need for medical travel.

Given that injuries are potentially 100% preventable and are a leading reason for medical travel, there could be substantial savings realized through injury prevention and safety promotion. The increased use of safety devices in recreational activities (i.e., helmets and life-jackets), as well as abstaining from the use of alcohol and drugs while operating all types of vehicles, would greatly reduce the incidence and severity of injuries. Moreover, a reduction of risky behaviours, such as avoiding the use of snow-machines on lakes when the ice is thin during freeze-up and break-up, would go a long way to reduce preventable injuries.

CHAPTER 6

Bringing it all Together

This chapter brings together the four areas of health service utilization. Here, the focus is on the resource intensity or relative demand by demographic and geographic variables.

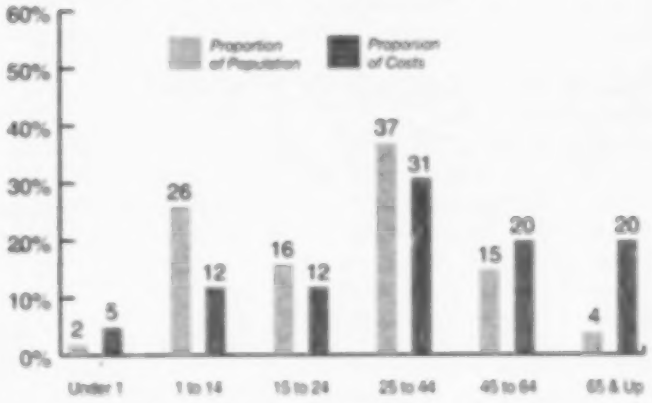
In the four previous chapters it was shown that age had the largest effect on the use of health services, in terms of cost drivers and future demand. Much of this chapter will examine the effects of an aging population, a demographic bulge that will have a significant influence on the Northwest Territories over the next two decades.

6.1 The Present

While it is obvious that seniors and older adults require more health care than children and young adults, the magnitude of the difference is not often apparent. Furthermore, the Northwest Territories is often seen as a young population. Relative to southern Canada, the population of the territory is youthful, however that is changing. Between 1994/95 and 1998/99, the entire population grew by 1%. Over the same period, the population of those age 45 to 64 years grew by 18%, and seniors age 65 and over grew by 20%. In contrast, the population under 45 decreased marginally, by about 3%.

As shown by Figure 6.1.1, the population 45 years and over needed approximately 40% of all health services, making up only 19% of the total population. Even larger was the difference between the proportion of people age 65 and over, and the proportion of services required. Here, the ratio was 5 to 1, with less than 4% of the population consuming 20% of the health services. In contrast, those patients age 1 to 14 years consumed 12% of all health services, but made up 26% of the total population. Taken together, the aging of the population, coupled with the high use of health care by seniors and older adults, will drive the demand for health care over the next 20 years.

Figure 6.1.1
Population and Health Care Costs
– Proportions by Age Group
Annual Average 1994/95 to 1998/99



Sources: Department of Health and Social Services and NWT Bureau of Statistics

Although not as large as the variance by age group, the difference in the use of health services by community type is also significant (See Figure 6.1.2). Between 1994/95 and 1998/99, Yellowknife made up 43% of the population, but residents consumed only 35% of territorial health care resources. In contrast, over the same time period residents of the other communities made up 33% of the population and consumed approximately 40% of all health care resources. Residents of the regional centres consumed almost the same proportion of health care as their proportion of the population.

Residents of smaller communities required more health care resources, relative to their population, because they had a larger share of the senior population[47] and because of their location.[48]

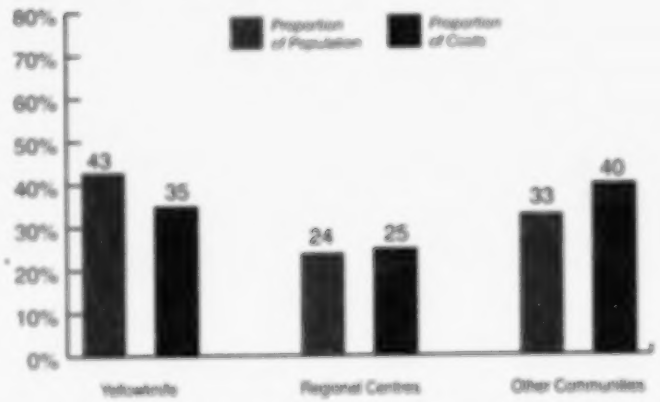
The cost per capita for seniors was five times higher than for the population as a whole. There were more seniors living in the other communities than in both Yellowknife and regional centres combined.

The fact that residents of the other communities do not have immediate access to hospitals and physicians creates a need to use medical travel much more frequently than residents of Yellowknife. For example, 60% of all medical travel expenditures were by residents living in non-hospital based communities.

As shown in Figure 6.1.3, the top reasons for the use of health services over the five years were respiratory diseases, mental disorders, pregnancy and childbirth, injury and poisoning, diseases of the digestive system, diseases of the nervous system and sense organs, and circulatory diseases. Together these seven conditions accounted for 70% of the use of health resources, where the condition was documented. However, as the territorial population ages the types of reasons for seeking health services will change.

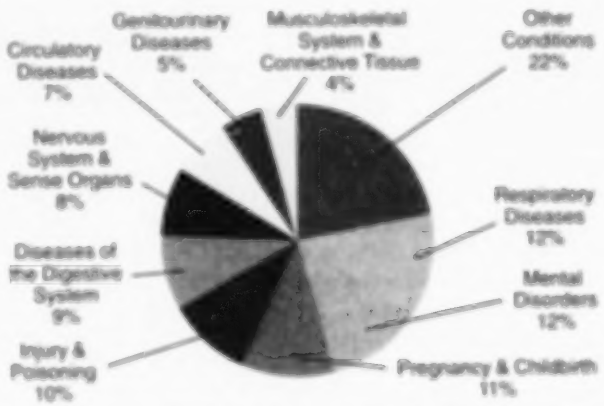
There will be increased demand for health care resources for conditions such as circulatory diseases and diseases of the nervous system and sense organs. Moreover, conditions such as respiratory diseases and mental disorders will continue to be at the top of the list for required health services. Demand coming from other conditions, such

Figure 6.1.2
Population and Health Care Costs
– Proportions by Community
Annual Average 1994/95 to 1998/99



Sources: Department of Health and Social Services and NWT Bureau of Statistics

Figure 6.1.3
Health Services – Proportion of Costs by Cause
Annual Average 1994/95 to 1998/99


Genitourinary Diseases 5%
Musculoskeletal System & Connective Tissue 4%
Other Conditions 22%
Circulatory Diseases 7%
Nervous System & Sense Organs 8%
Respiratory Diseases 12%
Diseases of the Digestive System 9%
Mental Disorders 12%
Injury & Poisoning 10%
Pregnancy & Childbirth 11%

Sources: Department of Health and Social Services and NWT Bureau of Statistics

47 Approximately 53% of seniors in the Northwest Territories lived in other communities between 1994/95 and 1998/99. Another 26% of the senior population resided in a regional centre, and the remaining 21% in Yellowknife. Custom Tabulations, NWT Bureau of Statistics, Spring 2000.

48 Another factor to consider is that the socioeconomic status of "other communities" was lower relative to Yellowknife and the regional centres during the period examined in this report. See The NWT Health Status Report 1999, for comparisons of housing, unemployment and personal income by community type.

as childbirth and pregnancy will still be high, but much less than has historically been the case. As seen below, these conditions tend to be age-related.

Circulatory diseases can take years to develop and the impact on the patient and the health system is seen in older age groups. The average cost per capita for all ages for all circulatory diseases was $108. For the population age 45 to 64, the cost per capita rose to $238. However, for the population age 65 and over, circulatory disease was in excess of $1,400 per capita – nearly thirteen times the average for all ages.

The costs for treating diseases of the nervous system and sense organs were also much higher in the older age groups. The average per capita cost was $123 for all ages, but nearly $1,200 for the population age 65 and over. Respiratory diseases were also much higher for the senior population, at over $1,300 per capita compared to $186 per capita for all ages.

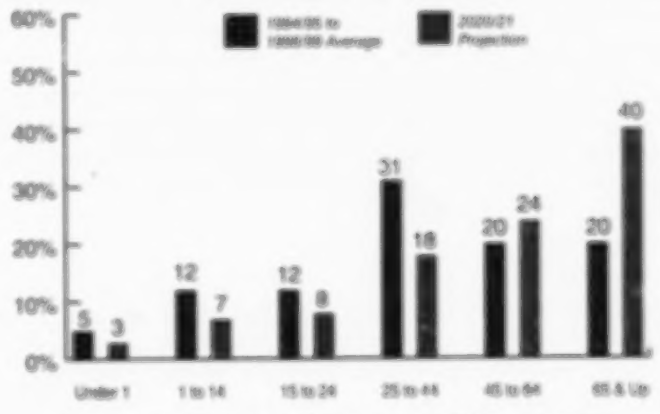
6.2 The Future

By 2020/21, the annual cost for health services used by NWT residents (hospitals, health centers and public health units, physicians and medical travel) will have increased by more than 140% from the annual average for 1994/95 to 1998/99. Outside of inflation, the driving force behind the annual cost increases will come from demographic shifts in the population, rather than population growth alone. Over 32% of the increase is due to the aging of the population, with population growth contributing a further 19% and inflation – set at 1.5% per annum – accounting for the remainder.

In addition to age, population growth and inflation, other cost drivers include increased expectations of the patient, advances in technology and pharmaceutical development. In a recent report – *Understanding Canada's Health Care Costs* – which represented the views of Provincial and Territorial Ministers of Health, it was noted that the public has increased its expectation for treatments that require the use of the latest technologies and pharmaceuticals. New technology and newly developed pharmaceuticals are beneficial but both are initially more expensive than current treatments when first introduced to the general health care system. Much of these expectations for the latest treatments come from people (baby boomers) who are now in their forties and fifties, and will be seniors in the next 10 to 20 years.[49] However, as detailed in Section 7 of Appendix 3, the effect of the post war baby boom and the collective attitudes of "boomers" is more of a southern Canadian concept, and is somewhat muted in the context of the Northwest Territories.

As shown in Figure 6.2.1, by 2020/21, well over 60% of the health care resources will be required by the population age 45 years and older. Moreover, the use of health resources by the senior population will outpace all other age groups. Slightly less than 9% of the territorial population will be over the age of

Figure 6.2.1
Proportion of Costs by Age Group
1994/95 to 1998/99 Average and 2020/21 Projection



Sources: Department of Health and Social Services and NWT Bureau of Statistics

[49] Provincial and Territorial Ministers of Health, Understanding Canada's Health Care Costs – Final Report, August 2000, p. 40 and p. 47.

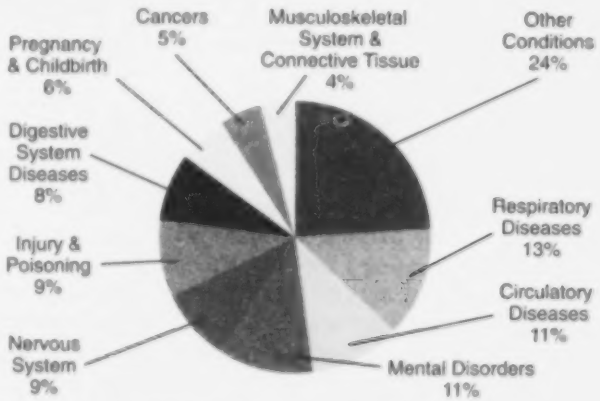
65 by 2020/21. Yet the senior population will require 40% of health care resources, if current patterns of use continue into the future. In contrast, those age 25 to 44 will consume proportionately less. Twenty years from now, people age 25 to 44 years will represent about 31% of the territorial population, but will consume around 18% of health care resources.

As noted in Section 6.1, the conditions or illnesses requiring the largest outlay of health care resources are projected to change over the next two decades. As the population ages, some conditions or reasons for using health services increase in demand as others decrease. Pregnancy and childbirth, which was the third highest in the past, is projected to fall to seventh place in 2020/21. In contrast, diseases of the circulatory system are projected to move from seventh to the second highest area of demand.

Circulatory diseases, diseases of the nervous system and sense organs, respiratory diseases, and cancers are predicted to be the four fastest growing disease classifications over the next 20 years.

Diseases of the circulatory system are projected to increase by nearly 300% over the next two decades, moving from seventh to second in the rank of conditions requiring the most health services (See Figure 6.2.2). Diseases of the nervous system will increase by over 180%, moving from sixth to fourth in the level of demand for health care resources. And, cancer is projected to increase by nearly 200%, moving from eleventh to eighth position. Diseases of the respiratory system will continue as the top group of conditions in demand for health care services.

Figure 6.2.2
Health Services Cost Projections
– Proportions by Cause
Annual Average 2020/21



Sources: Department of Health and Social Services and NWT Bureau of Statistics

Health care resources to treat mental disorders will grow, but at a rate less than the growth for all conditions combined. Part of what keeps mental disorders as one of the high demand conditions are the relative contributions of organic psychotic conditions such as senile and pre-senile dementia, and the long term effects of alcohol abuse (alcohol psychoses). These problems are more common in seniors and older adults, than in youth and young adults.[50]

As detailed in Section 7 of Appendix 3, these projections of future demand on health care resources are estimates based on past patterns of health service utilization and future predictions of population growth. While the need for health services, and the patterns of how that need translates into use, may change over time, they are not as likely to change as much as the population or the rate of inflation. Economic booms and busts have a complex effect on the north, influencing demographics and the cost of living in ways that cannot be easily predicted. These factors, in turn, affect the amount of health services required for a population.

As mentioned in the previous four chapters, much of the future burden of illness can be reduced through changes in lifestyles and injury prevention. Improvements to the health status of current and future seniors will help to keep the health system of the Northwest Territories sustainable in the years to come.

50 Sixty-four percent of the estimated cost of inpatient hospital treatment for alcohol psychoses was for patients age 45 and over and 100% cost for pre-senile and senile conditions was for patients age 45 and over.

CHAPTER 7

Concluding Remarks

This report presents a broad overview of the health services utilization by the people of the Northwest Territories at the end of the 20th century, as well as a glimpse into what the future may bring. What emerges is a picture of changing needs and demands on the health care system. As health status improves for the territorial population, so does the length of average life expectancy. Recent advances in medicine and medical technologies have allowed people with some chronic illnesses to live longer.[51]

While the population of the NWT is relatively young, it is nonetheless aging. The proportion of the population age 65 and over is growing much faster than the proportion under the age of 25 years. On average, most of the health care resources consumed by an individual are in the latter years of life. Health services to treat cancer, problems with the nervous system and sense organs, circulatory and respiratory diseases are disproportionately used by the senior population rather than by younger adults and children.

Respiratory diseases will continue to be foremost on the list of top conditions requiring health services over the next 20 years. The demand for health services to treat circulatory diseases (heart disease and stroke) will increase dramatically over the same time period. Injury and poisonings will continue to figure prominently in the demand for health services. The good news is that much of the illness surrounding these three conditions, as well as others, is preventable.

Lifestyle changes can make an enormous difference to the health of an individual, young or old. Healthy diets, low in fat and high in fibre, along with adequate physical activity will help to improve the lives of people now and as they age. A healthier lifestyle in general helps to reduce the chance of illness, the severity of illness, as well as to reduce the inevitable recovery time associated with illness. Reduction in the number of people smoking will also have the immediate effect of reducing the length of time people are ill with respiratory ailments, as well as reducing the number of people with chronic diseases related to smoking.

As seen in *The NWT Health Status Report* and highlighted in this report, there is a need to reduce injuries and poisonings. While injuries and poisonings are not the leading drain on health care resources they are significant and, in theory, 100% preventable. Although elimination is unlikely, there is plenty of room for reducing injuries and poisonings. Greater efforts towards the awareness of safety precautions in the workplace, in the home, and on the land and water, can help prevent injuries. Any success in the prevention of injuries and poisonings will undoubtedly reduce the demand for health services.

Most of the health care system of the Northwest Territories, as is the case across Canada, is focused on the treatment of disease. Health promotion and prevention efforts can go a long way to reduce the demand on institutions and professionals. Moreover, facilities and human resources will always be needed for treatment of illness and injury, but there is clearly room for a greater emphasis on prevention.

51 Provincial and Territorial Ministers of Health, *Understanding Canada's Health Care Costs – Final Report*, August 2000, pp. 40 to 45.

APPENDIX 1

Glossary

Affective Psychoses: Any of a number of mood disorders with associated psychotic symptoms such as delusions (false or irrational beliefs), hallucinations (seeing or hearing things which do not exist), markedly incoherent speech, or disorganized and agitated behaviour. These mood disorders include bi-polar disorders, depressive disorders, manic disorders, and manic-depressive disorders.

Alcohol and Drug Psychoses: Psychoses associated with alcohol and/or drug use. In terms of alcohol psychoses, includes Korsakoff's syndrome (alcoholic).

Bipolar Disorder: A manic-depressive psychosis, where manic and depressive symptoms are alternated or separated by periods of relative normality.

Cardiovascular: Having to do with the heart and/or blood vessels. The major cardiovascular disorders are heart problems and high blood pressure.

Communicable Disease: Any disease that can be transmitted from one person to another, most commonly spread through body contact and/or is airborne.

Convulsions: Violent, irregular motion of limb or body due to involuntary contraction of muscles.

Chronic Disease: A disease that is slow in its development and long in its continuance.

Circulatory System: A general term referring to those parts of the body involved in the circulation of the blood – heart, arteries, veins and other blood vessels.

Demographics: The characteristics of a population described in terms of size, distribution, composition (i.e., age, gender, ethnicity) and vital statistics.

Depressive Disorder: A mood disorder characterized by feelings of sadness and despair. Symptoms can include: feelings of hopelessness, changes in eating patterns, disturbed sleep, constant tiredness and thoughts of death or suicide.

Digestive System: A general term referring to those parts of the body involved in digesting food – mouth, throat, stomach and intestines.

Genitourinary System: A general term referring to the genitals and those parts of the body involved in urination.

Immunization: Protection against disease, by way of vaccination and through the body's own natural defenses.

Infant: A person who is less than one year old.

Inpatient: A person who is hospitalized, and is admitted to a hospital bed.

Life Expectancy (at birth): The number of years a newborn infant can expect to live, based on the average age of death at the time the child is born.

Manic Disorder: A mood disorder where symptoms can include periods of elation or feeling unusually 'high', restlessness, agitation, aggression and anger, grandiose ideas (delusions of greatness), and mixed-up thoughts.

Mental Disorders: A general term for a wide range of mental illnesses, including affective psychoses, alcohol and drug dependency, alcohol and drug psychoses, bi-polar disorders, depressive disorder, manic disorder, neurotic disorders, psychoses, schizophrenia, and senile related conditions.

Nervous System and Sense Organs: Refers to the central nervous system, peripheral nervous system and those parts of the body involved in senses (i.e., eyes and ears).

Neurotic Disorders: Mental disorders without any appearance of an organic basis. They are characterized by obsessive and compulsive behaviour, excessive anxiety, phobias (fears) and depression.

Outpatient: A person who receives care in a hospital setting, but is not admitted to a bed in the hospital. Such care includes after-hours care, emergency care, tests (i.e., laboratory or x-ray), and therapeutic care (i.e., physiotherapy or occupational therapy).

Palliative Care: Care for a person who is terminally ill. They have little chance of recovery and are made comfortable until they die.

Per Capita: Literally means per person.

Psychoses: A general term for a large number of mental disorders, including affective psychoses, organic psychoses (i.e., alcoholic psychoses and senile-related conditions) and schizophrenic disorders. Generally, impairment of mental function has developed to a degree that it interferes grossly with one's ability to meet some ordinary demands of life or to maintain contact with reality. Symptoms can include: delusions (false or irrational beliefs), hallucinations (seeing or hearing things which do not exist), markedly incoherent speech, or disorganized and agitated behaviour.

Prenatal: The time period from conception to birth.

Respiratory System: A general term referring to the parts of the body involved in the process of breathing – nose, throat, and lungs.

Respite Care: Care for a person who is normally cared for in a non-hospital based setting. The care is intended to provide a rest (respite) for the patient's regular caregiver(s).

Schizophrenia: A group of psychoses in which there is a fundamental disturbance of personality, a characteristic distortion in thinking, often a sense of being controlled by alien forces, bizarre delusions (false or irrational beliefs) and hallucinations (seeing, or especially, hearing things which do not exist).

Senile Related Conditions: Physical deterioration and mental deterioration, characteristic of old age, usually after age 50. Referred to as pre-senile when the disease begins before age 65 and senile when it occurs from age 65 onwards. Includes diseases such as Alzheimer's Disease.

Senior: A person who is 65 years of age or over.

APPENDIX 2

Table 1.1
Hospitalization – Various Indicators
Annual Averages, 1994/95 to 1998/99

VARIABLES	Total Patients	Total Visits	Total Bed Days	Expenditure	Visits Per Patient	Bed Days Per Patient	Bed Per Visit
Total	**4,633**	**7,438**	**36,826**	**$47,133,930**	**1.6**	**7.9**	**5.0**
Females	2,765	4,313	20,252	$26,019,919	1.6	7.3	4.7
Males	1,868	3,125	16,574	$21,114,011	1.7	8.8	5.3
0 to 14	**1,130**	**1,414**	**5,292**	**$5,963,694**	**1.3**	**4.7**	**3.8**
15 to 24	749	1,142	4,161	$5,136,809	1.5	5.5	3.6
25 to 44	1,625	2,610	11,241	$13,944,509	1.6	6.9	4.3
45 to 64	715	1,337	7,130	$9,591,392	1.9	9.9	5.4
65 and Up	430	936	9,002	$12,497,526	2.2	20.9	9.7
Aboriginal	**2,705**	**4,476**	**16,117**	**$27,798,532**	**1.7**	**6.0**	**3.6**
Non-Aboriginal	**1,928**	**2,962**	**12,168**	**$19,335,399**	**1.5**	**6.3**	**4.1**
Yellowknife	1,604	2,714	13,418	$17,705,304	1.8	8.8	5.0
Regional Centre	1,356	2,118	10,252	$12,259,341	1.5	7.6	4.8
Other Communities	1,687	2,606	13,155	$17,169,285	1.5	7.8	5.0
In Territory	**4,111**	**6,256**	**28,285**	**$40,439,307**	**1.5**	**6.9**	**4.5**
Out of Territory	**833**	**1,182**	**8,541**	**$6,694,623**	**1.4**	**10.3**	**7.2**
H&SS BOARDS							
Deh Cho	463	750	3,523	$4,123,490	1.6	7.6	4.7
Deninu	105	157	1,302	$1,833,770	1.5	12.3	8.3
Dogrib	346	551	2,332	$3,375,844	1.6	6.7	4.2
Fort Smith	318	508	2,288	$3,003,109	1.6	7.2	4.5
Hay River	623	956	4,330	$4,716,005	1.5	6.9	4.5
Inuvik	1,124	1,682	9,185	$11,706,929	1.5	8.2	5.4
Lutselk'e	62	121	447	$669,117	1.9	7.1	3.7
Yellowknife	1,604	2,714	13,418	$17,705,304	1.8	8.8	5.0
DISEASES AND CONDITIONS							
Infectious and Parasitic	116	133	897	$1,401,196	1.1	7.5	6.6
Cancers	126	171	1,539	$1,986,932	1.4	12.2	9.1
Endocrine, Nutritional & Metabolic	86	104	534	$754,770	1.2	6.2	5.2
Blood and Blood Forming Organs	28	42	205	$252,245	1.5	7.2	5.0
Mental Disorders	498	1,089	5,754	$5,952,681	2.1	11.5	5.7
Nervous System and Sense Organs	174	184	1,958	$3,101,113	1.1	11.3	10.4
Circulatory System	238	363	2,557	$3,404,555	1.5	10.7	7.0
Respiratory System	624	792	3,665	$5,202,363	1.3	5.9	4.6
Digestive System	688	744	2,516	$3,549,934	1.1	3.7	3.4
Genitourinary System	264	294	1,208	$1,630,289	1.1	4.7	4.1
Childbirth and Pregnancy	909	1,699	5,103	$5,263,532	1.9	5.6	3.0
Skin and Subcutaneous Tissue	99	107	632	$857,627	1.1	6.4	5.9
Musculoskeletal System and Con. Tissue	185	208	1,019	$1,503,222	1.1	5.5	4.9
Congential Anomalies	34	43	237	$238,409	1.3	7.2	5.7
Perinatal Period Conditions	126	145	1,050	$794,747	1.2	9.1	7.7
Symptoms and Signs	343	397	1,460	$1,930,983	1.2	4.2	3.7
Injury and Poisoning	552	654	2,740	$3,543,619	1.2	4.9	4.2
Total Diagnosed	**5,089**	**7,169**	**33,073**	**$41,368,217**	**1.4**	**6.5**	**4.6**
Supplementary Classifications	**225**	**262**	**3,717**	**$5,724,565**	**1.2**	**17.1**	**14.5**
Unknown	**8**	**8**	**36**	**$41,148**	**0.0**	**0.0**	**0.0**

Notes:
Dollar figures are straight from the database and only reflect an approximation of the cost of the hospital activity.
Total Diagnosed for all categories is simply a sum of the previous 17 diagnostic categories.

Sources: Department of Health and Social Services and NWT Bureau of Statistics

Table 1.2
Hospitalization – Various Indicators *(Continued)*
Annual Averages, 1994/95 to 1998/99

VARIABLES	Patients Per 1000	Visits Per 1000	Bed Days Per 1000	Cost Per Capita	Cost Per Patient	Cost Per Visit	Cost Per Bed Day
Total	**112**	**180**	**890**	**$1,139**	**$10,165**	**$6,340**	**$1,279**
Females	140	218	1,022	$1,313	$9,422	$6,047	$1,284
Males	87	145	769	$979	$11,270	$6,747	$1,275
0 to 14	**97**	**122**	**456**	**$513**	**$5,354**	**$4,250**	**$1,126**
15 to 24	116	177	645	$796	$6,854	$4,502	$1,244
25 to 44	105	168	724	$898	$8,567	$5,378	$1,247
45 to 64	113	212	1,133	$1,524	$13,383	$7,212	$1,349
65 and Up	293	635	6,128	$8,531	$29,047	$13,432	$1,386
Aboriginal	**134**	**222**	**798**	**$1,376**	**$10,281**	**$6,226**	**$1,723**
Non-Aboriginal	**91**	**140**	**575**	**$914**	**$10,000**	**$6,515**	**$1,589**
Yellowknife	85	151	749	$988	$11,589	$6,558	$1,320
Regional Centre	139	216	1,047	$1,252	$9,051	$5,799	$1,197
Other Communities	123	191	963	$1,257	$10,157	$6,573	$1,303
In Territory	**99**	**151**	**684**	**$977**	**$9,818**	**$6,462**	**$1,426**
Out of Territory	**20**	**29**	**207**	**$162**	**$8,079**	**$5,665**	**$788**
H&SS BOARDS							
Deh Cho	140	227	1,066	$1,248	$8,877	$5,482	$1,161
Deninu	189	283	2,353	$3,314	$17,268	$11,616	$1,391
Dogrib	130	207	877	$1,269	$9,744	$6,138	$1,445
Fort Smith	125	199	897	$1,178	$9,456	$5,920	$1,320
Hay River	167	255	1,157	$1,260	$7,568	$4,941	$1,095
Inuvik	114	170	927	$1,182	$10,431	$6,947	$1,271
Lutselk'e	178	347	1,286	$1,925	$10,681	$5,603	$1,499
Yellowknife	85	151	749	$988	$11,589	$6,558	$1,320
DISEASES AND CONDITIONS							
Infectious and Parasitic	3	3	22	$34	$11,590	$10,132	$1,535
Cancers	3	4	37	$48	$15,796	$11,662	$1,297
Endocrine, Nutritional and Metabolic	2	3	13	$18	$8,855	$7,383	$1,424
Blood and Blood Forming Organs	1	1	5	$6	$8,984	$6,177	$1,254
Mental Disorders	12	26	139	$144	$12,088	$6,134	$1,063
Nervous System and Sense Organs	4	4	47	$75	$17,842	$16,398	$1,545
Circulatory System	6	9	62	$82	$14,181	$9,351	$1,321
Respiratory System	15	19	89	$126	$8,332	$6,577	$1,421
Digestive System	17	18	61	$86	$5,174	$4,831	$1,415
Genitourinary System	6	7	29	$39	$6,326	$5,550	$1,352
Childbirth and Pregnancy	22	41	123	$127	$5,802	$3,097	$1,032
Skin and Subcutaneous Tissue	2	3	15	$21	$8,808	$8,112	$1,373
Musculoskeletal System and Con. Tissue	4	5	25	$36	$8,142	$7,216	$1,476
Congential Anomalies	1	1	6	$6	$7,278	$5,661	$1,013
Perinatal Period Conditions	3	4	25	$19	$7,160	$6,061	$779
Symptoms and Signs	8	10	35	$47	$5,587	$4,846	$1,320
Injury and Poisoning	13	16	66	$86	$6,425	$5,422	$1,304
Total Diagnosed	**123**	**173**	**800**	**$1,000**	**$8,129**	**$5,771**	**$1,251**
Supplementary Classificaitons	**5**	**6**	**90**	**$138**	**$26,294**	**$22,307**	**$1,539**
Unknown	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Notes:
Dollar figures are straight from the database and only reflect an approximation of the cost of the hospital activity.
Total Diagnosed for all categories is simply a sum of the previous 17 diagnostic categories.

Sources: Department of Health and Social Services and NWT Bureau of Statistics

Table 2
Outpatient Activity – Various Indicators
Annual Averages, 1994/95 to 1998/99

VARIABLES	Total Patients	Total Visits	Expenditure	Visits Per Patient	Patients Per 1000	Visits Per 1000	Cost Per Capita	Cost Per Patient	Cost Per Visit
Total	**22,868**	**78,060**	**$6,698,304**	**3.4**	**553**	**1,887**	**$162**	**$293**	**$86**
Females	12,297	46,092	$3,912,254	3.7	621	2,326	$197	$319	$85
Males	10,570	31,968	$2,786,050	3.0	490	1,483	$129	$264	$87
0 to 14	5,701	14,539	$1,231,624	2.5	491	1,252	$106	$218	$86
15 to 24	3,500	10,718	$890,893	3.1	543	1,663	$139	$256	$84
25 to 44	8,808	30,130	$2,560,734	3.4	568	1,942	$165	$292	$86
45 to 64	4,181	17,633	$1,566,705	4.2	658	2,778	$244	$370	$88
65 and Up	972	5,040	$448,348	5.2	658	3,410	$300	$452	$87
Aboriginal	**10,013**	**35,406**	**$3,044,252**	**3.5**	**495**	**1,750**	**$150**	**$304**	**$86**
Non-Aboriginal	**12,854**	**42,654**	**$3,654,053**	**3.3**	**609**	**2,020**	**$174**	**$285**	**$86**
Yellowknife	10,762	34,108	$2,954,158	3.4	601	1,904	$165	$293	$86
Regional Centre	7,213	29,136	$2,472,644	4.4	737	2,977	$253	$345	$85
Other Communities	5,067	14,816	$1,271,503	2.9	371	1,084	$93	$252	$87
In Territory	**21,466**	**69,882**	**$5,755,108**	**3.3**	**519**	**1,689**	**$139**	**$269**	**$83**
Out of Territory	**1,472**	**8,178**	**$943,197**	**5.7**	**36**	**198**	**$23**	**$665**	**$116**
H&SS BOARDS									
Deh Cho	1,640	5,951	$456,480	3.5	496	1,801	$138	$277	$81
Deninu	293	850	$70,567	2.9	530	1,537	$128	$234	$80
Dogrib	832	1,916	$170,520	2.3	313	720	$64	$201	$87
Fort Smith	1,837	7,457	$627,365	4.1	720	2,924	$246	$343	$84
Hay River	2,899	10,735	$897,413	3.7	775	2,868	$240	$310	$84
Inuvik	4,603	16,585	$1,484,183	3.6	465	1,674	$150	$324	$90
Lutselk'e	166	457	$37,552	2.7	478	1,314	$108	$226	$82
Yellowknife	10,762	34,108	$2,954,158	3.4	591	1,873	$162	$293	$86
DISEASES AND CONDITIONS									
Infectious and Parasitic	1,021	1,197	$96,731	1.2	25	29	$2	$97	$83
Cancers	281	362	$31,952	1.3	7	9	$1	$120	$91
Endocrine, Nutritional & Metabolic	165	245	$19,510	1.5	4	6	$0	$121	$82
Blood and Blood Forming Organs	54	77	$6,140	1.4	1	2	$0	$117	$82
Mental Disorders	653	1,033	$82,911	1.6	16	25	$2	$128	$80
Nervous System and Sense Organs	2,298	3,451	$281,959	1.5	56	83	$7	$127	$86
Circulatory System	434	629	$53,249	1.4	11	15	$1	$123	$85
Respiratory System	3,310	4,761	$374,313	1.4	80	115	$9	$118	$82
Digestive System	1,760	2,297	$222,593	1.3	43	56	$5	$131	$100
Genitourinary System	1,279	1,731	$146,323	1.4	31	42	$4	$119	$88
Childbirth and Pregnancy	1,028	2,158	$171,923	2.1	25	52	$4	$174	$82
Skin and Subcutaneous Tissue	1,127	1,541	$123,592	1.4	27	37	$3	$113	$83
Musculoskeletal System and Con. Tissue	1,348	1,819	$147,612	1.4	33	44	$4	$114	$84
Congential Anomalies	51	61	$5,704	1.2	1	1	$0	$115	$96
Perinatal Period Conditions	35	42	$3,460	1.2	1	1	$0	$99	$83
Symptoms and Signs	2,344	3,031	$241,725	1.3	57	73	$6	$106	$83
Injury and Poisoning	4,520	5,884	$463,518	1.3	109	142	$11	$106	$83
Total Diagnosed	**21,708**	**30,320**	**$2,473,214**	**1.4**	**525**	**733**	**$60**	**$114**	**$82**
Supplementary Classificaitons	**16,563**	**47,953**	**$4,225,091**	**2.9**	**400**	**1,159**	**$102**	**$251**	**$87**
Unknown	**0**	**0**	**0**	**0**	**0**	**0**	**0.0**	**0.0**	**0.0**

Notes:
Dollar figures are straight from the database and only reflect an approximation of the cost of the hospital activity.
Total Diagnosed for all categories is simply a sum of the previous 17 diagnostic categories.

Sources: Department of Health and Social Services and NWT Bureau of Statistics

Table 3
Physician Services – Various Indicators
Annual Averages, 1994/95 to 1998/99

VARIABLES	Total Patients	Total Visits	Expenditure	Visits Per Patient	Patients Per 1000	Visits Per 1000	Cost Per Capita	Cost Per Patient	Cost Per Visit
Total	**33,657**	**194,181**	**$11,714,919**	**5.8**	**813**	**4,694**	**$283**	**$348**	**$60**
Females	17,453	116,832	$7,126,835	6.7	881	5,896	$360	$408	$61
Males	16,204	77,349	$4,588,084	4.8	752	3,588	$213	$283	$59
0 to 14	**8,969**	**39,526**	**$2,001,275**	**4.4**	**773**	**3,404**	**$172**	**$223**	**$51**
15 to 24	5,234	27,280	$1,649,544	5.2	813	4,235	$256	$315	$60
25 to 44	12,952	74,687	$4,653,130	5.8	835	4,815	$300	$359	$62
45 to 64	5,791	39,339	$2,456,783	6.8	912	6,192	$387	$424	$63
65 and Up	1,404	13,348	$954,188	9.5	952	9,043	$646	$678	$71
Aboriginal	**14,597**	**84,406**	**$5,269,987**	**5.8**	**721**	**4,169**	**$260**	**$361**	**$62**
Non-Aboriginal	**19,060**	**109,775**	**$6,444,932**	**5.8**	**903**	**5,199**	**$305**	**$338**	**$59**
Yellowknife	16,204	98,894	$5,741,110	7.0	905	5,522	$321	$409	$58
Regional Centre	9,034	57,315	$3,237,917	6.4	923	5,855	$331	$358	$56
Other Communities	8,771	37,971	$2,735,892	4.3	642	2,778	$200	$312	$72
In Territory	**31,289**	**174,653**	**$9,828,070**	**5.6**	**756**	**4,224**	**$238**	**$314**	**$56**
Out of Territory	**9,017**	**35,625**	**$1,886,849**	**4.0**	**218**	**861**	**$46**	**$215**	**$53**
H&SS BOARDS									
Deh Cho	2,221	9,731	$666,918	4.4	672	2,944	$202	$301	$69
Deninu	420	1,831	$139,330	4.4	760	3,310	$252	$331	$76
Dogrib	1,776	7,674	$543,553	4.3	668	2,886	$204	$306	$71
Fort Smith	2,270	14,865	$779,099	6.5	890	5,830	$306	$343	$53
Hay River	3,799	23,390	$1,271,217	6.2	1,015	6,250	$340	$335	$54
Inuvik	7,020	36,227	$2,479,543	5.2	709	3,657	$250	$353	$68
Lutselk'e	285	1,563	$93,988	5.5	819	4,497	$270	$330	$60
Yellowknife	16,204	98,894	$5,741,110	7.0	905	5,522	$321	$409	$58
DISEASES AND CONDITIONS									
Infectious and Parasitic	4,528	7,220	$314,541	1.6	109	175	$8	$69	$44
Cancers	1,225	2,432	$235,048	2.0	30	59	$6	$192	$97
Endocrine, Nutritional and Metabolic	1,725	3,750	$180,372	2.2	42	91	$4	$104	$48
Blood and Blood Forming Organs	371	589	$30,698	1.6	9	14	$1	$82	$52
Mental Disorders	3,998	12,342	$855,946	3.1	97	298	$21	$215	$69
Nervous System and Sense Organs	8,179	16,375	$994,340	2.0	198	396	$24	$122	$61
Circulatory System	2,599	6,958	$464,163	2.7	63	168	$11	$178	$67
Respiratory System	11,985	23,791	$991,008	2.0	290	575	$24	$83	$42
Digestive System	4,922	9,060	$846,703	1.8	119	219	$20	$172	$93
Genitourinary System	6,185	12,863	$750,648	2.1	149	311	$18	$121	$58
Childbirth and Pregnancy	3,139	9,203	$964,223	2.9	76	222	$23	$307	$105
Skin and Subcutaneous Tissue	5,283	8,445	$332,892	1.6	128	204	$8	$63	$39
Musculoskeletal System and Con. Tissue	6,713	13,215	$709,542	2.0	162	319	$17	$106	$54
Congential Anomalies	560	871	$102,172	1.6	14	21	$2	$185	$118
Perinatal Period Conditions	310	632	$71,832	2.0	0	0	$0	$0	$0
Symptoms and Signs	9,232	16,319	$851,372	1.8	223	395	$21	$92	$52
Injury and Poisoning	8,595	14,330	$928,527	1.7	208	346	$22	$108	$65
Total Diagnosed	**79,546**	**158,397**	**$9,624,027**	**2.0**	**1,915**	**3,814**	**$231**	**$121**	**$61**
Supplementary Classificaitons	**19,410**	**51,515**	**$1,782,325**	**2.7**	**469**	**1,245**	**$43**	**$92**	**$35**
Unknown	**2,119**	**3,806**	**$308,567**	**1.8**	**51**	**92**	**$7**	**$146**	**$81**

Notes:
Dollar figures are straight from the database and only reflect an approximation of the cost of the hospital activity.
Total Diagnosed for all categories is simply a sum of the previous 17 diagnostic categories.

Sources: Department of Health and Social Services and NWT Bureau of Statistics

Table 4
Health Centre and Public Health Unit Services – Various Indicators
Annual Averages, 1994/95 to 1997/98

Variable	Total Patients	Total Visits	Estimated Cost	Visits Per Patient	Patients Per 1000	Visits Per 1000	Cost Per Capita	Cost Per Patient	Cost Per Visit
Total	**19,507**	**107,068**	**$8,114,934**	**5.5**	**470**	**2,582**	**$196**	**$418**	**$76**
Females	10,060	61,396	$4,730,912	6.1	507	3,095	$238	$472	$77
Males	9,447	45,672	$3,384,022	4.9	437	2,112	$156	$360	$74
0 to 14	8,304	34,455	$2,686,508	4.2	711	2,952	$230	$327	$78
15 to 24	2,766	13,503	$1,067,148	4.9	426	2,078	$164	$391	$79
25 to 44	5,516	28,016	$2,119,433	5.1	353	1,794	$136	$385	$76
45 to 64	2,567	17,168	$1,229,648	6.7	412	2,757	$197	$479	$72
65 and Up	1,109	13,927	$1,012,196	12.6	769	9,672	$699	$909	$72
Aboriginal	**12,627**	**88,584**	**$6,700,752**	**7.0**	**700**	**4,415**	**$333**	**$530**	**$76**
Non-Aboriginal	**6,880**	**18,484**	**$1,414,182**	**2.7**	**294**	**863**	**$66**	**$209**	**$78**
Yellowknife	4,809	10,740	$783,331	2.2	267	596	$43	$177	$74
Regional Centre	3,788	8,581	$648,567	2.3	386	875	$66	$174	$76
Other Communities	11,072	87,747	$6,683,036	7.9	811	6,430	$489	$604	$76
H&SS BOARDS									
Deh Cho	2,314	13,629	$915,916	5.9	700	4,124	$277	$392	$67
Dennu	570	6,357	$427,011	11.2	1,029	11,489	$772	$751	$67
Dogrib	2,361	19,025	$1,466,326	8.1	888	7,154	$551	$621	$77
Fort Smith	1,190	2,657	$175,317	2.3	467	1,042	$69	$149	$66
Hay River	1,430	3,073	$254,638	2.2	382	821	$68	$181	$84
Inuvik	6,650	47,862	$3,801,404	7.2	671	4,832	$384	$573	$80
Lutsel'e	318	3,725	$290,991	11.6	915	10,715	$837	$917	$80
Yellowknife	4,809	10,740	$783,331	2.2	264	590	$43	$166	$74
DISEASES AND CONDITIONS									
Infectious and Parasitic	2,609	3,942	$160,468	1.5	63	95	$4	$62	$41
Cancers	112	463	$28,129	4.2	3	11	$1	≥252	$61
Endocrine, Nutritional and Metabolic	397	1,130	$59,658	2.8	10	27	$1	$150	$53
Blood and Blood Forming Organs	325	477	$16,918	1.5	8	12	$0	$54	$35
Mental Disorders	1,012	1,886	$133,677	1.9	24	45	$3	$131	$70
Nervous System and Sense Organs	3,561	7,161	$351,812	2.0	86	173	$8	$99	$49
Circulatory System	699	2,230	$111,016	3.2	17	54	$3	$158	$50
Respiratory System	5,966	14,438	$798,885	2.4	144	348	$19	$134	$55
Digestive System	3,203	5,412	$315,521	1.7	77	130	$8	$98	$58
Genitourinary System	1,801	3,412	$190,308	1.9	43	82	$5	$106	$56
Childbirth and Pregnancy	492	777	$55,098	1.6	12	19	$1	$112	$72
Skin and Subcutaneous Tissue	2,893	5,441	$276,783	1.9	70	131	$7	$95	$51
Musculoskeletal System and Con. Tissue	1,845	3,340	$177,674	1.8	44	80	$4	$95	$53
Congential Anomalies	23	26	$1,220	1.1	1	1	$0	$53	$48
Perinatal Period Conditions	36	45	$2,372	1.3	1	1	$0	$66	$52
Symptoms and Signs	3,129	5,088	$326,016	1.6	75	123	$8	$103	$63
Injury and Poisoning	4,479	7,170	$509,498	1.6	108	173	$12	$114	$71
Total Diagnosed	**32,580**	**62,436**	**$3,515,052**	**1.9**	**786**	**1,506**	**$85**	**$108**	**$56**
Supplementary Classifications	**107**	**142**	**$7,233**	**1.1**	**3**	**3**	**$0**	**$37**	**$32**
Unknown	**0**	**0**	**$0**	**0.0**	**0**	**0**	**$0**	**$0**	**$0**
PUBLIC HEALTH ACTIVITY									
Assessments	8,177	16,631	$594,294	2.0	197	401	$14	$73	$36
Screening	6,656	10,079	$366,967	1.5	161	243	$9	$55	$37
Counselling	3,701	7,009	$240,224	1.9	89	169	$6	$66	$35
Immunization	9,280	12,952	$451,974	1.4	223	312	$11	$49	$35
Follow-Up	7,242	30,188	$1,419,559	4.2	175	729	$34	$197	$47
Health Promotion	11,166	28,833	$1,302,648	2.6	269	696	$31	$118	$46
General Public Health	580	701	$48,797	1.2	14	17	$1	$83	$69
Administration	1,864	4,466	$210,857	2.2	45	107	$5	$108	$51
Total Public Health Activity	**48,665**	**235,872**	**$4,635,320**	**4.8**	**1,173**	**2,674**	**$112**	**$95**	**$20**

Notes:
Financial data is based on time estimated for each visit then divided by the total budget for all health centres and public health units.
Also, the sum total of financial activity by Disease and Public Health Activity does not add up to the total costs due to some double entries in reason for service.
Total Diagnosed and Total Public Health Activity are simple totals of all sub-categories. Table does not include Group Activity ($1.8 Million).

Sources: Department of Health and Social Services and NWT Bureau of Statistics

Table 5
Medical Travel – Various Indicators
Annual Averages, 1994/95 to 1998/99

VARIABLES	Total Patients	Expenditure	Patients Per 1000	Cost Per Capita	Cost Per Patient
Total	**3,189**	**$5,785,120**	**76**	**$140**	**$1,825**
Females	1,789	$3,023,909	90	$153	$1,707
Males	1,370	$2,761,211	64	$128	$2,020
0 to 14	514	$1,314,947	48	$122	$2,579
15 to 24	529	$902,120	73	$124	$1,705
25 to 44	1,068	$1,490,327	76	$106	$1,410
45 to 64	677	$1,134,964	87	$145	$1,676
65 and Up	399	$942,762	271	$634	$2,342
Aboriginal	**2,443**	**$4,367,023**	**118**	**$212**	**$1,796**
Non-Aboriginal	**715**	**$1,417,851**	**35**	**$68**	**$1,999**
Yellowknife	441	$945,300	25	$53	$1,952
Regional Centre	779	$1,347,131	80	$138	$1,732
Other Communities	1,958	$3,492,690	143	$255	$1,803
In Territory	**2,501**	**$3,026,010**	**60**	**$73**	**$1,220**
Out of Territory	**937**	**$2,759,110**	**23**	**$67**	**$2,949**
H&SS BOARDS					
Deh Cho	484	$708,106	147	$214	$1,462
Dehcho	101	$107,285	183	$194	$1,060
Dogrib	163	$227,949	61	$86	$1,480
Fort Smith	246	$293,981	96	$115	$1,198
Hay River	295	$414,271	79	$111	$1,436
Inuvik	1,389	$3,029,840	140	$306	$2,192
Lutselk'e	56	$58,389	162	$168	$1,129
Yellowknife	441	$945,300	25	$53	$1,952
DISEASES AND CONDITIONS					
Infectious and Parasitic	29	$41,316	1	$1	$1,392
Cancers	169	$360,174	4	$9	$2,117
Endocrine, Nutritional and Metabolic	74	$113,355	2	$3	$1,509
Blood and Blood Forming Organs	14	$24,030	0	$1	$1,622
Mental Disorders	391	$392,784	9	$10	$1,001
Nervous Sys. and Sense Organs	279	$333,871	7	$8	$1,193
Circulatory System	195	$450,209	5	$11	$2,253
Respiratory System	158	$305,761	4	$7	$1,934
Digestive System	380	$465,609	9	$11	$1,240
Genitourinary System	258	$214,590	6	$5	$839
Childbirth and Pregnancy	326	$386,419	8	$9	$1,209
Skin and Subcutaneous Tissue	58	$56,381	1	$1	$1,067
Musculoskeletal System and Con. Tissue	246	$236,928	6	$6	$977
Congential Anomalies	63	$135,628	2	$3	$2,151
Perinatal Period Conditions	17	$69,758	0	$2	$4,438
Symptoms and Signs	394	$560,916	10	$14	$1,426
Injury and Poisoning	385	$795,804	9	$19	$2,079
Total Diagnosed	**3,438**	**$4,943,534**	**83**	**$119**	**$1,438**
Supplementary Classifications	**726**	**$838,757**	**18**	**$20**	**$1,191**
Unknown	**4**	**$2,829**	**0**	**$0**	**$601**

Notes:
Dollar figures are straight from the database and only reflect an approximation of the cost of the hospital activity.
Total Diagnosed for all categories is simply a sum of the previous 17 diagnostic categories.

Sources: Department of Health and Social Services and NWT Bureau of Statistics

APPENDIX 3

Data and Methodology

This appendix provides an explanation of the data[52] and the methodology used to analyze that data for this report. For the most part, the methodology has been kept consistent across chapters. However, given the variety of health services covered in this report, particular aspects of each chapter's methodology vary.

1.0 General

All the data in this report is patient-centred, rather than facility-centred. The patient's encounters with the health system have been examined in and of themselves (i.e., male versus female or senior versus youth, etc.), and relative to the population as a whole. All data are gathered around different characteristics of the patient and the relevant segment of the territorial population that the patient represents.

All of the following is consistent across Chapters 2 to 6.

1.1 Patient (Unique)

Throughout the report patients are counted only once per year for each type of service event, regardless of how many encounters they may have had with the particular type of service. However, when the analysis turns to service event by cause, then the same patient may be counted more than once. For example, a person who visits a hospital for a problem with their heart and then, later in the same year, visits the hospital with a broken arm, would be counted twice. The same double counting may occasionally occur when patient counts by age group are tabulated. When patients age 0 to 14 and 15 to 24 are being compared, a particular patient may encounter the health system once at age 14 years and then again at age 15 all in the same year. In this case, the patient would be counted twice – once in each age group. For the most part, double counting is rare and it does not impact the analysis in most circumstances.

However, discrepancies may be even more confusing in the data that examine the reasons underlying visits to doctors, hospitals, and health centres. For example, the reader may note that the apparent number of patients reported by reason for seeing a doctor may be up to three times the overall number reported for any given year. This simply reflects that many patients see a doctor for multiple reasons and are, therefore, represented multiple times.

1.2 Service Cost

The costs of health services in this report are estimates only, and do not reflect absolute costs. Each chapter has different sources for the costs of the services, which are explained below. However, the costs are to a large extent proportionate to the resource intensity involved in providing health care.

For example, one patient that spends ten days in the hospital due to an injury or illness costs more than ten patients who go to a hospital ten times each, per year, for physiotherapy. The only way to measure the relative utilization of health services is to examine the proportional costs for each service, even if it is not the absolute cost. The count of patients and visits is still useful, but does not provide the entire picture.

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52 All data was run from Departmental databases between August and December 2000. Future reports, from data run January 2001 onwards, may show insignificant changes to the numbers in this report. Such changes are due to record entry revisions and data entry delays.

1.3 Time Frame

The time frame of this report is from 1994/95 to 1998/99. An average of these five years is used for all data. The year 2020/21 is used as a focal point for projections of health service demand (See Section 7).

1.4 Residency and Community Type

The focus of this report is on the patient, and therefore the patient's residency at the time they received a health service. All patients examined are from the Northwest Territories, and do not include former residents of the old Northwest Territories who are now residents of Nunavut. The territory is further divided into three residency groupings by community type: Yellowknife, regional centres and other communities.

The population has been divided by type of community, to examine the differences in service use depending on access to the services. In Yellowknife and the three communities that make up the regional centres, there are hospitals. In the other communities there are no hospitals. Moreover, in the smaller communities, and to some extent in regional centres, there is limited access to local physician services relative to the access enjoyed by residents of Yellowknife.

The ethnicity of the population in each type of community varies, with Yellowknife being primarily Non-Aboriginal, the regional centres about fifty-fifty, and the other communities almost exclusively Aboriginal.

1.5 Age and Ethnicity

The patient activity has been grouped into the following age groups:

Infants	Under 1 year of age[1]
Children	Age 1 to 14 years
Youth/Young Adults	Age 15 to 24 Years
Adults	Age 25 to 44 Years and Age 45 to 64 Years
Seniors	Age 65 & Over.

These age groups are standard groupings often used in national reports on health services, and allow for future cross-jurisdictional comparisons.

The ethnic groupings are as follows: Aboriginal (Dene, Metis, and Inuit) and Non-Aboriginal.

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1) Health service utilization by infants is high, and while important to present in such a report on health services, the use of "infants", as a category for age analysis has been limited for two reasons. First, the Department's administrative databases do not always have a complete picture of infant utilization of hospital services in the first few weeks. This is because it often takes awhile for a newborn to receive a health care plan number. The services or hospitalization for the infant are often recorded under the mother's health care plan number. These services received in the first few weeks of life are often the most intensive and represent the greatest proportion of services for infants over the course of the first year of life. Second, using population-based rates for a single year of age artificially inflates the rate. Population-based rates use a population figure estimated on one day of the year (usually July 1). When considering the number of unique patients that received a service, the patients are aggregated for 365 days of a year. Thus, all the under 1 year olds are considered on each and every day of the year. The result is an inflated rate, well beyond the mathematical maximum of 1,000 per 1,000 (100%). This is not a significant problem when multiple years of age are used (i.e., 1 to 14 years).

1.6 Rates

Throughout the report, rates are used to control for relativity in the use of health services. Rates combine the activities of the patients against the population as a whole (patients divided by the population, then multiplied by 1,000).

If one only looked at the total number of female patients versus the total number of male patients, then any conclusions on which gender is more likely to use a service would be faulty. For example, even though there may be more males using services, there may also be more males in the population as a whole. Thus, one needs to control for the relative size of the male versus female population.

Another population-based rate, cost per capita, is perhaps the single most important indicator in understanding the utilization of health care services. As noted above, counting patients or counting visits does not reveal everything about how a population used health services. Counting the dollars behind the service provides a fairly good proxy of the demands on the system to service each health issue or what may be called resource intensity. However, when one wants to understand the relative demand of the population as whole, or especially in parts, then cost needs to be measured in a relative manner. Per capita cost – the total costs of services for people hospitalized divided by the total population – provides the required measure of relativity.

1.7 Reasons for Health Care Services

When reasons or causes of hospitalizations, emergency visits, health center visits, physician clinic visits or medical travel are provided, most of the categories used are covered by the International Classification of Diseases, 9th Revision (ICD-9). There are 17 Classifications (or Chapters) for "known" or "suspected" medical conditions. (See list below for a brief description of each of the classifications by relevancy to the Northwest Territories.) Each one of these classifications or chapters contains several hundred codes, each of which provide a particular identification of the medical condition in question. In some cases, where a particular chapter makes up most of the use of a particular type of health service, greater detail is provided for the reader. The greater detail involves presenting the codes that make up the chapter in groupings that make more sense to the lay reader.

In addition to the 17 Classifications of the ICD-9, there is a catchall category called Supplementary Classification of Factors Influencing Health Status and Contact with Health Services. The Supplementary Classification contains the codes that document the secondary reasons why a patient requires a health service (i.e., an x-ray because they have injured their arm). A hospitalization is often documented under the Supplementary Classification for such things as post-surgery aftercare and palliative care. Most patients receiving care for those services initially entered a hospital for another reason. Supplementary Classification codes are used throughout the health system, though health centres have a slightly different way of using them, as well as their own set of Public Health Codes (See Section 4).

The following is a list of the seven ICD-9 Classifications which figure prominently as causes for health service utilization in the Northwest Territories:

1. Diseases of the Respiratory System (Bronchitis, Asthma, Chronic Airway Obstruction and Pneumonia);
2. Mental Disorders (Affective Psychoses, Alcohol Dependency, Alcohol Psychoses, Senile and Pre-senile Dementia [i.e., Alzheimer's Disease], Depression, Neurotic Disorder and Schizophrenia);
3. Normal and Complicated Childbirth and Pregnancy;[14]

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14 Childbirth and Pregnancy includes all of Classification 11 and the following V codes related to childbirth V22, V24, V27 to V39.

4. Injury and Poisoning (Fractures, Sprains, Trauma, Poisoning by Chemicals, Open Wounds);
5. Diseases of the Digestive System (Gallstones, Pancreatic Diseases, Stomach and Intestinal Diseases, Appendicitis, Dental and Jaw Diseases);
6. Diseases of the Nervous System and Sense Organs (Paralysis, Epilepsy, Alzheimer's Disease, Parkinson's Disease, Ear and Eye Diseases or Infections); and
7. Diseases of the Circulatory System (Heart Diseases, Stroke, and Conditions related to Arteries and Veins, etc.).

The following is a list of the remaining ten ICD-9 Classifications which do not figure prominently – relative to the seven above – as causes for health service utilization in the Northwest Territories. These are often seen grouped under "Other Conditions" throughout the report.

1. Infectious and Parasitic Diseases (Tuberculosis, Whooping Cough, Meningitis, Sexually Transmitted Diseases);
2. Neoplasms (Cancers);
3. Endocrine, Nutritional and Metabolic Diseases (Diabetes, Thyroiditis, Vitamin Deficiencies, Cystic Fibrosis, Obesity);
4. Diseases of the Blood and Blood-Forming Organs (Anemia, Diseases of White Blood Cells, Diseases of the Spleen);
5. Diseases of the Genitourinary System (Kidney and Bladder Disorders, Uretha and Urinary Tract Disorders, Inflammatory Diseases of the Reproductive Organs);
6. Diseases of the Skin and Subcutaneous Tissue (Cellulitis, Abscesses, Diaper Rash, Eczema, Psoriasis, Sunburn, Corns, Calluses, Ingrown Nails, Baldness, Acne);
7. Diseases of the Musculoskeletal System and Connective Tissue (Lupus, Sclerosis, Arthritis, Spinal Disorders, Rheumatism, Bunions, Osteoporosis);
8. Congenital Anomalies (Spina Bifida, Cleft Palate and Cleft Lip, and a host of other conditions which are present at or before birth);
9. Certain Conditions Originating in the Perinatal Period (problems related to the fetus or a newborn beginning in the 20th to 28th week of gestation and ending 7 to 28 days after birth); and
10. Symptoms, Signs and Ill-Defined Conditions (Hallucinations, Convulsions, Fever, Fatigue, Rash, Headache, Wheezing, Nausea, Pains, etc.)[55]

The following is a list of some of the secondary reasons for health service utilization included under Supplementary Classification of Factors Influencing Health Status and Contact with Health Services. This Classification includes three major types relevant to the Northwest Territories:

1. When a person who is not necessarily sick encounters the health care system for some specific purpose, such as to act as a donor of organ or tissue, to receive a vaccination, routine health check-up or examination, or to discuss a problem which is in itself not a disease or injury;

55 The classification of Symptoms, Signs and Ill-Defined Conditions is used when a diagnosis cannot be clearly made (sometimes there are two possible diagnoses). With the exception of Medical Travel, it is not given a rank and it is placed in the category of "Other", with the other less prevalent conditions. Medical Travel places Symptoms, Signs and Ill-Defined Conditions in the rankings of top reasons for travel because it figures significantly in the cause for a large proportion of medical travel.

2. When a person with a known or suspected disease or injury, which is current or resolving (healing or mending), encounters the health care system for a specific treatment or investigation related to that disease or injury (i.e., x-ray, laboratory exam, dialysis, chemotherapy, physiotherapy, occupational therapy, cast change); and
3. When a person is recovering from surgery, receiving palliative care or respite care.

2.0 Hospitals

2.1 Data Source

All data for t e chapter on hospitals comes from the Territorial Health Insurance Services (THIS) Database. The THIS database is administered by the four territorial hospitals and the Department of Health and Social Services. The data captures all patient encounters with territorial hospitals[56] and the encounters of territorial residents with hospitals outside of the Northwest Territories. Data on residents hospitalized outside of the territory is forwarded by each jurisdiction to the Department.

2.2 Visits

Hospital visits are divided into two types: inpatient hospitalization and an outpatient visit. An inpatient hospitalization is when a patient is admitted to the hospital for day surgery or a stay for one night or longer. An outpatient visit is where a person has visited outpatient services at least once in any given day.

2.3 Bed Days

Bed days are used only in the analysis of inpatient activity. One bed day can be either a day in the hospital, as in the case of day surgery, or one overnight stay.

2.4 Costs

The actual cost of running hospitals in the Northwest Territories is not completely reflected in this document. The costs presented here are gathered from estimates provided by the THIS database. These costs are estimates for the purposes of inter-jurisdictional billings or reciprocal billings for services received by non-residents of the Northwest Territories. They are the amounts the Government of the NWT would bill the non-resident's home province or territory for the hospital services they received in the NWT. They are estimated on a bed day basis, and vary by ward and by facility.

Given that the utilization of a facility varies every day, the actual costs for each particular service cannot be estimated.

Financial data presented on out of territory hospital services is a very close approximation of actual costs, as the Government of the Northwest Territories is billed directly by other jurisdictions for the service.[57]

However, the costs are, to a large extent, proportionate to the resource intensity involved in providing health care.

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56 The four hospitals are Stanton Regional, H.H. Williams, Fort Smith Health Centre, and Inuvik Regional. Up until 1997 there was an additional hospital (Fort Simpson Hospital), as well as an insured facility for alcohol and drug treatment called Yellowknife Detox.

57 Patients, to a much lesser degree, are also reimbursed for services they have received outside of the territory.

3.0 Physicians

3.1 Data Source

All data for the chapter on physicians comes from the Medicare Database, which is administered by the Department of Health and Social Services, physician clinics and health and social service boards. The data captures all patient encounters with territorial physicians (salaried and fee for service) and all encounters by territorial residents with physicians outside of the Northwest Territories. The accuracy of the information presented in this chapter is entirely dependent on the accuracy of the information provided to the Department by physicians.

3.2 Encounters

An encounter or visit with a physician is defined as follows: one encounter equals one visit with a physician on any given day at a clinic, or each physician visit to the bedside of a person who is hospitalized. Due to the limitations of the administrative database that captures physician activities, multiple visits to the same physician at a clinic in one day cannot be separated out. However, multiple visits on the same day to the same physician are relatively rare.

3.3 Costs

Physicians, during the five years covered by this report, fell into two types of payment categories: fee for service and salary. Most physicians were fee for service, allowing for a fairly accurate portrayal of the cost of their services. However, those few who were on salary – mainly specialists – had their activities estimated. Salaried physicians provide a record for each service they perform, based on the same fee schedule designed to pay physicians who are not on salary. Much like a territorial hospital where the actual bed day cost varies depending on the occupancy rate, the actual cost per service provided by a salaried physician varies on how large their workload is in any given year.

In the fall of 2000 most physicians in the NWT became salaried employees of the health and social services boards. While this did not alter the data collected for this report, this change will affect the projections of physician costs, as those costs were based on historical information.

4.0 Health Centres and Public Health Units

4.1 Data Source

All data for the chapter on health centres and public health units (PHU) comes from the Community Health Management Information System (CHMIS), which is administered by the health centres, the PHUs and the Department of Health and Social Services. The data captures all patient encounters with health centres and public health units within the Northwest Territories.

4.2 Visits

Certain public health services are frequently provided in 'group' settings, e.g., well-baby clinics, in which patient specific information is not detailed. Group activities will be discussed separately from individual services.

4.3 Costs

CHMIS is the administrative database that captures service activity in health centres and PHUs across the Northwest Territories. CHMIS does not directly capture the actual or estimated costs of those services. It does capture an estimate of the time spent with each patient for each visit to the facility.

For the purposes of estimating the cost of services provided to patients, the time amounts captured in CHMIS have been changed into dollars. The model used to extrapolate costs from time is as follows. First, the amount of time for all health centre and PHU activities is summed for each fiscal year. Second, the total amount of time is divided against the actual expenditures for health centres and PHUs to arrive at an estimated cost per minute. Third, the average cost per minute is multiplied against the total time spent on patients by the type of analysis being done. For example, the total amount of time spent on patients age 0 to 14 years is then multiplied against the average cost per minute, to come up with an estimate of how many resources were used by or for children.

While not perfect, the extrapolation of time into money was necessary in order to weigh the relative use of services by one group of patients versus another. Moreover, it was important to be able to add the services from the other areas of the health system, together with CHMIS, in order to get a complete picture of health services for Chapter 7.

The estimation of cost for health services provided through health centres and PHUs works best in broad levels of analysis. It is not very useful for microanalysis of time spent on a specific activity, such as a particular type of immunization.

Where cost of services is discussed in this chapter, it must be noted that this is an estimate produced for the purposes of this report only and should not be quoted out of the context of this report.

4.4 Reasons for Visits

The majority of services occur in a private client-provider setting in which the primary reason for the visit is recorded and falls into one or both of two broad categories: medical (i.e., morbidity) and public health. In the case of medical visits, the prominent morbidity is classified with either an ICD-9 code or it's adjunct, an 'S' (Supplementary Classification) code. Supplementary Classification codes are intended for use in visits dealing with on-going treatment, monitoring (follow-up) of specific conditions, or investigation of specific conditions without a confirmed diagnosis.

In the case of public health services (i.e., an immunization event or a health promotion activity), a public health code (P code) is recorded. Costs quoted here were derived from an estimate of the operating and maintenance expenses (O/M) for all health centres/public health units for the years 1994/95 through 1997/98.

Finally, the analysis concerns services provided by health centre or public health unit staff to NWT residents only. Records for non-NWT patients were not included in the analysis and represent only a small fraction of all services provided (< 1%). The reader may notice that where service costs are estimated by category, the sum of the various subcategories does not appear equivalent to the annual costs. The primary reason is that 'individual' visits and 'group' visits are discussed in separate sections of this chapter. The sum of the cost of individual visits and group visits approximates the total annual costs, save for the relatively small cost of providing service to non-NWT patients.

4.5 Time Frame

Analysis is provided for the four fiscal years 1994/95 through 1997/98 inclusive. 1998/99 data were not analyzed because Yellowknife data (which represents a substantial proportion of the public health services) is incomplete in the CHMIS database after 1997/98. Yellowknife Health and Social Services (YKHSS) began using Wellcom in August 1998 to track health services provided at the Yellowknife public health unit. The data in CHMIS and Wellcom are not compatible and thus cannot be merged.

5.0 Medical Travel

5.1 Data Source

All data for the chapter on physicians'comes from the Medical Travel Database, which is administered by the Department of Health and Social Services and territorial health and social services boards. The data captures all patient travel paid for by the Department, as well as travel for the patient's escort(s).

5.2 Costs

Medical travel costs found in the administrative database that tracks medical travel are fairly accurate. However, there was a loss of a small percentage of the total records pertaining to territorial residents for a couple of years. Some adjusting in costs also takes place after the fact and is not always updated in the database. These two factors create a minor variance in the medical travel costs shown in Chapter Five and those costs seen in the Main Estimates for the Department of Health and Social Services.

5.3 Reasons for Travel

It is difficult to group unique patients by the reason or cause of their travel. On the patient's travel form, which initiates the trip, the reason for travel is often filled out when the condition of the patient is unclear. Often the patient is complaining of pains and his condition is recorded as Symptoms, Signs and Ill-Defined Conditions. When the patient reaches his destination for treatment a more precise diagnosis is made. Even when the person authorizing the travel is more precise, i.e., stating "respiratory disease" as the reason, the physician who treats the patient in Yellowknife, Edmonton or elsewhere often makes a slightly different diagnosis. That diagnosis could still be within the broad category of diseases of the respiratory system, but a different ICD-9 Code.

In both cases, the patient has two travel records (the flight out and the return flight, each with a different diagnosis (ICD-9 Code). The medical database does not allow for an efficient and thorough way to capture the patient's travel by the diagnosis at the time of treatment. Grouping travel by patient and diagnosis ends up with a significant number of double counts for travel.

While not perfect, grouping the reason or cause of medical travel by cost avoids the problem of double counting. It results in categories such as Symptoms, Signs and Ill-Defined Conditions being overstated, from the perspective of the diagnosis in a hospital. The limitations of using the cost of the travel by reason points to a shortcoming of the current system which tracks medical travel.

6.0 Bringing it all Together: Four Areas of Health Services

Chapter 6 rolls up the costs for health services detailed in each of the four preceding chapters. Because of database and time restraints, analysis was limited to costs and not a roll up of unique patient counts. Also, visits and encounters could not be rolled-up due to database restraints and methodological incompatibilities. Outpatient visits to hospitals also often involve an encounter with a physician. In the hospital chapter, the outpatient visit is captured by the use of the facility and support staff, whereas the chapter on physicians captures the use of a physician service. Thus, double counting would occur if all visits and encounters were simply summed.

As noted previously, per capita costs (costs divided by the population) provides the best tool for analysis of how health services are used by any given population. Chapter 6 provides a comprehensive and relatively balanced means of measuring how most of the health care resources are used in the Northwest Territories. In some respects, it is the most important chapter of the report.

7.0 Projections

In each of the four chapters, Chapters 2 to 5, there is a section on future projections of the particular services analyzed in this report. These projections are restricted to cost or resource intensity of various health services. The model has two parts and is based on several assumptions about the future.

The first part of the model involves taking the cost of services used by residents of the Northwest Territories from 1994/95 to 1998/99 and dividing them by the population as a whole to establish a set of average per capita rates. Given the varying patterns of use of health services by age, sex, and community of residency, the per capita rates have been broken out by three geographic groupings and then by age groups and gender. The three geographic groupings are Yellowknife, regional centers (Hay River, Inuvik, and Fort Smith) and other communities. The age groups, split by gender (except with the group Under 1), are in five-year age groupings from age 5 to 64, and then as follows: 65 to 74, 75 to 84 and 85 and over.

The second part of the model takes the average per capita rates from 1994/95 to 1998/99 and applies them to population projections for the territorial population for the same cohorts grouped by residency, age and gender. Then an assumption of 1.5% annual rate of inflation for the next two decades is made.

These numbers do not take into account the complete cost of running the health systems, as noted above. However, they do shed some light on the potential for cost increases due to the aging population, among other variables.

Cost projections are estimates, and the projection methodology used in this report is conservative in nature. The projections are likely to be conservative for a number of reasons: technological change, rising expectations, increasing life spans, and inflation.

As noted in *Understanding Canada's Health Care Costs*, "emerging and new technologies are likely to accelerate increases in the costs of health services beyond any predictions of future costs that are based on current approaches to care and technology."[58] As new technological advances occur, their use will spread due to increased acceptance by health care professionals and increased consumer demand for the latest diagnostic tools and treatments.

58 Provincial and Territorial Ministers of Health, *Understanding Canada's Health Care Costs – Final Report*, August 2000, p. 40.

As the "baby boomers" age, there is likely to be an additional increase in the cost of health services associated with age. As noted in *Understanding Canada's Health Care Costs*, the expectations of baby boomers "are dramatically different from those of their parents and grandparents. Their sense of entitlement to health services will lead to increased demand for, and use of, these services. And, in the more immediate term, it will likely cause them to intervene on behalf of their parents to demand faster access to more services."[59]

Consideration of the "baby boom" may be somewhat inappropriate in a northern context, with almost half of the population being Aboriginal. In addition to ethno-cultural differences, approximately 60% of the territorial population in their "boomer" years is Non-Aboriginal. Moreover, only about 30% of the senior population is Non-Aboriginal. However, the proportion of seniors who are Non-Aboriginal is increasing in the north. Between 1994 and 1999, Non-Aboriginal seniors increased at twice the rate of Aboriginal seniors. Thus, there is some evidence to suggest that the impact of boomer generation will be felt in the north, even if it is somewhat lessened when compared to the south.

The rate of inflation is low in the face of an active economy where labour markets have tightened and wage demands from the health sector are starting to boom. Much of what it costs to run a hospital is driven by the wages of the staff. Given that the south has also been facing shortages of nurses and physicians, the north will likely have to compete even harder with southern jurisdictions to provide staff to meet the growing health care demands.

Also, the inflation rate is based on the economy of the whole and does not attempt to look at the health sector in particular. In *Understanding Canada's Health Care Costs*, the Provincial and Territorial Ministers of Health assume an average inflation rate of 2% per annum with an extra 1% per annum to cover off "other costs" related to health care.

Finally, another factor not accounted for in the projection is the increasing life expectancy of the territorial population. Between 1981 and 1997, the average life expectancy for males increased from 67 to 72 years, and for females it increased from 72 to 76 years.[60] The positive aspects of increased life expectancy are tempered by how a longer life might impact the health care system. It is vital to recognize the importance of this issue. The increased length of time to consume health services by those living longer consequently will increase demand and costs to the health system.

59 Provincial and Territorial Ministers of Health, Understanding Canada's Health Care Costs – Final Report, August 2000, p. 47.
60 NWT Bureau of Statistics.

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